

# STATUS OF THE IMPLEMENTATION OF LPIS IN THE EU MEMBER STATES

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## ABSTRACT:

In order to better assist the EU Member States in the proper updating of IACS-GIS, the MARS-PAC action of JRC has collected systematic up-to-date information of the status of the implementation of LPIS from the MS Administrations. This includes information on the orthophoto (orthoimage) coverage at national level; the definition of the reference parcel; the workflow established for the LPIS update; tolerances introduced; actors involved, statistics provided, etc. To be able to define the appropriate measures and recommendations, the information collected should be organized in a certain way, enabling comparative analysis and review. Recently the MARS-PAC team elaborated a study on the status of the LPIS implementation in the EU MS, based on preliminary defined questionnaire and extensive data collection.

## 1. INTRODUCTION

### 1.1 Study aim

The purpose of the study was to make a short analysis of the data collected from the Administrations of the EU Member States on their strategy, methodological approach and organization of the workflow for the update of the Land Parcel Identification System. Attention is given also to some specific topics as the update of orthoimagery, block boundaries updating and application of rule 75&/90%.

Apart from the general information requested, the aim of this inquiry was also to put a focus on some pending questions among the EU Member States as:

- Is the sample a good way to evaluate the LPIS for Art. 6 (2) of Commission Regulation 796 / 2004?
- Is the risk analysis for the OTS a good approach to derive the sample?
- To what extent could the random selection of dossiers to check and the results obtained from this control be used as input to evaluate the quality of the LPIS, regarding Art. 6 (2)?
- Is it feasible to do a 100% check on eligibility? Or, is using the surrogate of “claimed” land good enough? If yes, could we use directly the results from OTS to evaluate LPIS for Art. 6 (2)?
- Is Art 6 (2) a good or useful management tool for the Member States? Or is there a need to update the regulation?
- Is the LPIS primary a supporting tool for the IACS and other domains? Has the LPIS become in fact a “Land Management Information System”? How many countries have this approach?
- At what extent is Art.6 (2) compliant with the latest developments of the CAP reform?

### 1.2 Data Sources

There is an extensive data pool available in MARS-PAC (organized mainly through the File Maker Pro system), where a vast and various information on the IACS-GIS development in EU MS is available. This data is collected during different technical missions, workshops, pilot studies and communications with the EU MS administrations. However it was decided that a new inquiry among the MS will provide better-structured and homogeneous up-to-date information on status of the LPIS in all EU member states.

One of the challenging tasks was the identification of the appropriate operational body and contact person(s) in the MS Administration, to approach for the inquiry. In the case of some MS, different persons in different organizations have been identified to answer on specific part of the inquiry. Due to the short timeframe, the direct contacts were (in most of the cases) limited to the high-level managing persons, who were helpful to take the task of collecting and providing the necessary information from their organizations. For that reason, there are still some points remained to be clarified on more detailed technical level, which could be discussed directly with the technical experts and staff.

## 2. METHODOLOGY

### 2.1 Collection Methods Used

In order to facilitate the collection of the information, the inquiry was organized as a questionnaire with a limited set of focussed and well-defined questions. Taking into account that the inquiry had to be made in one of the busiest period for the administration, linked to the processing of aid declarations, the questionnaire had to be kept simple and easy to fill. It was developed and posted on the Web, with additional possibility to

be filled online. This saved time and effort for both sides, regarding e-mail communication and data processing.

The questionnaire was divided in two sections – general information of LPIS and topics specific to the LPIS update and the methods estimating its currency. Part of the questions had a list of possible answers to tick. For some of them, more than one answer could be provided. The aim was to define the questions in a way to provide clear and unambiguous feedback on the issues identified to resolve.

The internal JRC document, regarding the status of the orthophoto coverage and the future plans of the EU MS regarding was redesigned (especially the section for the Web LPIS) and sent to the MS Administration for update. Some new fields/parameters, related to the specifications of the orthophoto have been added.

## 2.2 Tools for analysis and visualization

The data retrieved from the questionnaire was exported in XLS format. Excel was used for the preparation of the statistics and the generation of the charts. As some information had to be presented geographically, the alphanumeric data was geocoded (linked) to the country polygons, used as reference geographical objects. The ArcView GIS was used for the geographical representation. Same tools were used for the updated data on the orthophoto and the Web LPIS.

## 2.3 Accuracy and Reliability of the results

The following factors have (in a different degree) impact on the accuracy of the data provided and the final interpretation of the results:

- The collection methods and tools were not rigorous enough to avoid the users of making typing mistakes in the questionnaire or in the table for the status of orthophoto
- Some questions were not precise enough to ensure that the answers will be unambiguous. Probably, they had to be accompanied with some additional description or glossary.
- In some cases the technical expertise of the contacted persons was not enough to provide clear and correct answers on some of the questions
- In few cases, the contact persons identified, were not the most appropriate to provide answer to some specific set of questions.

For that reason, additional discussions and clarifications were made with some MS on the dataset collected, especially after the presentation of the first results of the study during the LPIS workshop in October 2006. Also part of the data provided in the questionnaire was validated against the existing information in MARS-PAC (previous reports and workshops).

Another important point was that part of the data requested was missing, because either it is not collected by the appropriate MS or was not available at the moment.

Due to the factors mentioned above, the interpretation of some data was difficult, without further discussion of some organizational/technical details with the MS Administration. Thus, this study put its focus to describe the overall picture of the status of the LPIS and to present the general trends for the future strategies, without trying to go deeper in the complexity of this matter.

## 3. RESULTS FROM THE STUDY

### 3.1 General comments

At the time of the data collection, Bulgaria and Romania were not yet members of the EU, so they were not included in the list of countries, asking to fill the questionnaire. However, at later stage, information on the final orthophoto coverage and the LPIS completion were retrieved and they were included in the statistics (fully presented for the orthophoto and partially for the LPIS).

The German administration kindly provided separate information for some Landers (Bavaria and Baden-Wurtemberg). The UK Paying Agency also kindly sent separate information sheets for Wales, Scotland and Northern Ireland. In order to keep the reference scale on country level, this additional information is only partly presented in this study.

#### 3.1.1 Legislative framework and institutions responsible

The EC defines clearly the legal framework of the IACS-GIS in several Council and Commission regulations. However many MS have decided to set their own legal base (compliant with the EC regulations) in order to define better the responsibilities of the governmental institutions and their interaction with the farmers. For example in Czech Republic, the local regulation clearly describes the obligation of the farmers, regarding their role in the annual update of the LPIS.

It is interesting that all new MS from the last two enlargements (2004 and 2007) have implemented their own national legal framework on the LPIS. From the old 15 MS, the countries having their own legislation on the matter are: Italy, Spain, Germany, Luxemburg, Finland and Belgium (Flanders).

Usually the institution responsible in the MS for the LPIS is either the Paying Agency or the Ministry of Agriculture, but in some cases the technical tasks for the LPIS management and update are delegated to different body inside the government (FOMI in Hungary) or are outsourced to a private company (in Finland and Lithuania). In those MS, where the reference parcel is the cadastral one (as Poland or some German Landers), the regional geodetic services are also involved in the update of the LPIS.

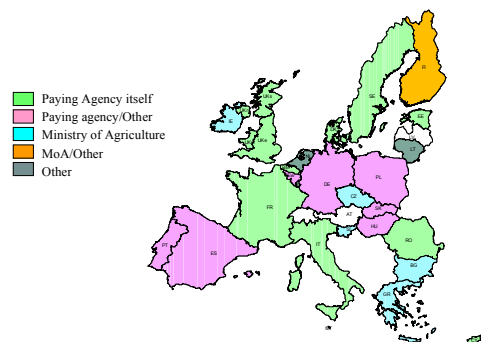


Fig. 1 Institution responsible for the LPIS update in the EU MS

### 3.1.2 Reference parcel defined

The most commonly used reference parcel in the EU MS is the “physical block” (including BG and RO). It is the most generalised reference object to be used, but it is rather stable in time and simpler regarding the update. MS used also the agriculture parcel or the farmer block (in equal proportions) as reference parcels. Their choice might be more appropriate, from the point of view of facilitating the administrative cross-check, but it is more complex and time consuming regarding the LPIS update. Those MS, which set their LPIS on the base of the cadastre, use the cadastral parcels as reference ones (Poland, Spain, Italy and some Landers in Germany).

The choice of the reference parcel depends mainly on the historical development of the land management in the country and the usual farmer practices. In other hand, this choice is crucial for the development of the IACS and the organization of the control. It is also linked to the way the LPIS was initially created. The LPIS based on the cadastre, have specific problems due to the different philosophy of the cadastral parcel (based on ownership) comparing to the other LPIS reference parcels (based on land use).

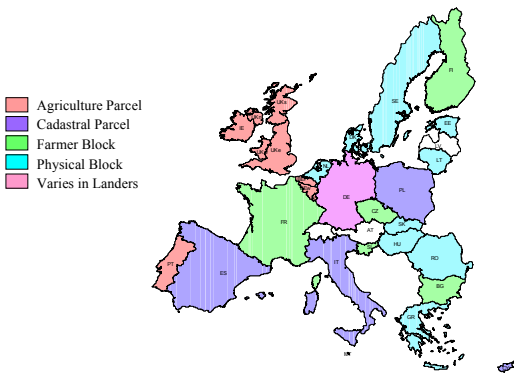


Fig. 2 Type of reference parcel on which the LPIS is based in EU MS

### 3.1.3 Initial creation of the LPIS

It was not surprising that almost all the MS relied on the existing or new orthophoto coverage to create the reference parcels. It was done mainly by computer – assisted photointerpretation (CAPI) or through a contact with the farmers, who assisted by an operator, delineate on screen or printed copy the blocks they are cultivating. In some countries (CZ, Flanders, Germany and Bulgaria) additional field measurement have been taken to validate the parcels delineated by the operators or farmers.

Some countries, like Italy, UK, Spain, Denmark and Poland used also other datasets for the creation of the LPIS as: cadastral maps, land redistribution plans, topomaps. In all cases when such data is used as a basic layer to derive the reference parcels, a follow-up validation and checking is performed with archive or new orthoimages. The only exception is UK, where the Administration claim that the Ordnance Survey maps, they are using are correct enough and the use of orthophoto is not necessary. The method for creation of the LPIS in Germany varies from Lander to Lander.

In few MS, archive or new VHR satellite data was extensively used for the creation of LPIS as a backup of the aerial

orthophoto, delayed for various reasons (GR, PL, CY, RO and BG). The use of VHR data is considered very appropriate to cover border or other areas where flight restrictions are applied.

### 3.1.4 Use and dissemination of LPIS data

It became evident recently that the LPIS data is no more strictly dedicated to support the aid declaration and subsequent control. In fact the information stored in the LPIS is already broadly used by other external users. This is because, the reference parcels, together with the orthophotos and the attribute information on the land use, form the basic set of components, necessary for any decision regarding the land management. In addition, apart from the reference parcels themselves, the LPIS database contains other layers of information (or at least is able to overlay them on-the-fly), which together could be made broadly available through simple Web interface. Only 5 MS out of 27 (IT, NL, IE, Flanders and DE) don't provide LPIS data to external organizations or users.

### 3.1.5 Data used and methods applied for LPIS update

All MS use the regularly updated part of the orthoimage coverage (mainly through aerial flights) as a basic source for the update of the LPIS. The only exceptions were Greece and UK, which at the time of the inquiry didn't declare the use of orthophoto for the LPIS update. However, the recently launched tender in Greece for new orthophoto coverage of the country (both aerial and VHR), points out the intentions of the Greek administration to benefit from this data source for the revision of the reference parcels.

The results of the OTSC are also a very important source of information for the update of the LPIS. The on-the-spot checks are very convenient updating mechanism as they are running every year and are ensured from the point of view of budget and personnel by the appropriate paying agencies. Another important point is the fact that the OTSC doesn't provide only recent information on certain set of parcels, selected for control, but though the results of the findings, could also indicate potential problems or trends in the development of the LPIS. The results of the OTSC could be used even more efficient, if the risk analysis to define the control sample takes into account the areas where the LPIS should be updated.

The information from the updated orthocoverage is not sufficient itself for the actualization of the LPIS, without a proper interpretation of the land cover/land use. It could be done by CAPI in the office (in case of physical blocks), but in most of the cases the information provided by the farmer is more accurate and significant. For that reason, most of the MS use the interaction with the farmers during the preparation of the aid declaration or regularly during the year to obtain this vital information. For example, in CZ the farmer are obliged to report in the LPIS any change of parcel or land use in due time.

In those countries, where the reference parcel is based on the cadastral one, the recent data on land consolidation and change of property is providing additional input to the process of LPIS update.

The systematic conduction of field checks (apart of the OTSC), although used by some MS, is not considered a primary method for LPIS update, due to its complexity and the need of allocating huge administrative and technical resource. Some MS are using it as support to the other tools they are using or as

quality control of the CAPI of the newly provided orthophoto coverage.

### 3.1.6 Assessment of the currency of the reference parcels

A clear analysis of this topic at this stage is very difficult mainly due to the complex interpretation of the results from the questionnaire. A deeper examination of the cross links and correlations between the assessment of the currency of the LPIS, the actual process of update and the definition of the reference parcel is necessary. Also some answers, provided by the MS, were not clear enough or contradictory.

For example, several MS (SE, LU, LT and IE) stated that one of the methods they are using to assess the currency of the reference parcels is based on the summary information from the regular field check. This is not corresponding to their answers on the previous question, regarding the tools used for LPIS update, where the conduction of systematic field checks is missing. Obviously these MS put different meaning on the term “field checks”, comparing to definition in the questionnaire. An example of possible confusion of the terminology used, could be the terms “risk analysis” and “random sample”, which in the questionnaire are referring to the sample used to evaluate the currency of the LPIS parcels and not to the sample declarations to control.

Anyway, the general impression is that most of the MS are estimating the currency of the reference parcels, using all possible data sources and activities during the year with a predominance of the systematic analysis of the new orthophotos and review of the results from the OTSC/administrative control. Regarding the use of recent orthocoverage, this evaluation is done on a selected part or on the whole set of reference parcels for which a new data is available and not on predefined statistically represented set on regional or national level.

Some MS (Ireland, Flanders, Wallonia and Cyprus) are using statistically representative set of parcel to evaluate the currency of the LPIS, based on risk analysis. Other few (Finland, Greece and also Cyprus) are using random sample. However, it was not clear from their answers, if the “risk analysis” and “random” samples differ from those prepared for the OTSC or are the same.

More than 70% of the MS, assess the currency of the reference parcels by applying the rule 75/90% (Art. 6 (2) of Commission Regulation 796/2004). Most of them implement the rule on national level. DE and UK apply the rule on regional level (Landers, Regional Governments). PL declared to apply the rule on a selected geographical area (probably where the orthophotos are most recent). FI and GR pointed both national and regional level, while IE points all three possibilities. Apparently this topic should be discussed further on.

### 3.1.7 LPIS update and farmers’ declarations

Considering the importance of the data provided by the farmers for the update of the LPIS, it was necessary to understand when this data is introduced in the system. In most of the MS, this action is conducted at the time of the preparation of the farmer application.

However, many MS have opened also the option to the farmers to provide information on their parcels during the whole year. This data, if declared after certain deadline is considered valid for the next campaign.

Many MS provided additional comments and notes, regarding the information provided by the farmers for the LPIS update, from which is evident that the organization of the aid declarations and pre-registrations of the parcels is specific for each country. In Germany, each of the Bundesländer has to set up its own rules, depending on the type of reference system.

### 3.1.8 LPIS update and OTSC

Point (k) of Art. 27 (2) of R. 796/04 gives a list of “other factors defined by the MS”, which could be included in the risk analysis for the selection of dossiers to control. The ones most relevant to the update of the LPIS are as follows:

- Area claimed is less than 90% of the gross LPIS reference
- No control for previous 4 years is made
- Claiming Set-aside and not inspected in the last three years
- Land under permanent pasture

The control of some GAECs is also related to some specific land feature recorded in the LPIS (single trees, hedges, wall, monuments, etc.). Even limited to only 1% of the claims, this control could provide some important indications of the currency of certain part of the LPIS.

Only 4 MS (EE, IE, PL and LU in future) declared that in the risk analysis for OTSC, they consider the areas where LPIS needs to be updated. This is not much surprising, taking into account that the most important factors in the selection of the dossiers to control are linked with the amount of aid and the size of the farm. Many countries also didn’t provide any input on that issue, which bring the need to discuss this topic more in detail at later stage.

## 3.2 Role of the Orthoimagery

### 3.2.1 The orthoimagery in the EU MS, sensors used

All the inquired MS provided updated information on the status of the orthoimagery. From the data received, it became evident that all countries are using orthoimagery except UK, which administration is declaring that no orthophotos are used either for the LPIS or for the control. Although that no official communication was made with Austria, Malta and Latvia, MARS-PAC has information from other sources that these countries are using orthophotos as well.

The orthoimages in the MS varies from the point of view of resolution, origin, scale, radiometry and coverage. This is probably due to the multipurpose character of this dataset, dedicated to be used for various needs with specific requirements. The observed heterogeneity of the orthocoverage among the MS, from the point of view of the specifications, is due also to other reasons like: different institutions responsible, historical development, economic and security issues, etc.

The main source for the production of nation-wide orthoimagery remains the aerial acquisition. Some MS opened already the option for the use of aerial digital cameras (frame of pushbroom). Although the digital technology provides better quality in terms of radiometry and detail, there are some specific limitations, regarding the height of the flight and the processing chain. Also some MS still face difficulties in applying declassification of the raw digital data, as the relevant military authorities in the country requested.

Some MS (IT, DE, PL, BG, Flanders and Greece) are using also VHR satellite data together with the aerial orthophotos for part of their countries. Due to flight restrictions, CY is using VHR satellite data only for the LPIS preparation. IE has in addition to the aerial, a complete VHR coverage from 2006.

### 3.2.2 Resolution and radiometry

The minimum scale for the cartographic information used to create and update the LPIS is 1: 10 000, which corresponds to an orthoimagery of at least 1 meter resolution. However, most of the orthoimages used in the LPIS are with ground sampling distance (GSD) of 50 cm. Half of the MS have orthophotos with GSD in the range of 40 – 60 cm. Germany has orthoimages with broad range of resolution – from 25 cm to 1 meter, as each Lander has its own strategy for the orthoimage production. Poland has the same range of resolution, caused by the fact that the country coverage was made in the frame of several projects with different specifications. Sweden and Ireland have an orthophoto at the largest possible pixel of 1 meter, while Italy decided to be on 80 cm. Spain and Slovenia have orthophotos with resolution below 50 cm with a lower limit of 25 cm.

More than 50% of the EU MS have complete coverage of colour orthoimages. Some of them (SI, CY and Wallonia) have also parts containing infrared channel (IR). Two MS (Sweden and Greece) have only black and white orthophotos, but they both have recent plans to migrate to colour. 25% of the MS have mixed set of colour and B&W orthophotos. Finland has predominantly IR with some smaller parts of natural colour and B&W. They also started recently to update their coverage.

BG and RO also completed their orthoimage coverage recently (aerial, 50 cm, colour). The Bulgarian authorities ordered in addition last year VHR satellite data (IKONOS and Quickbird) on a territory of 33 000 km<sup>2</sup> to backup the delays in the orthophoto production. They still currently use this VHR dataset. RO will use VHR for some small gaps in the orthophoto (0.2-0.7 % of the country).

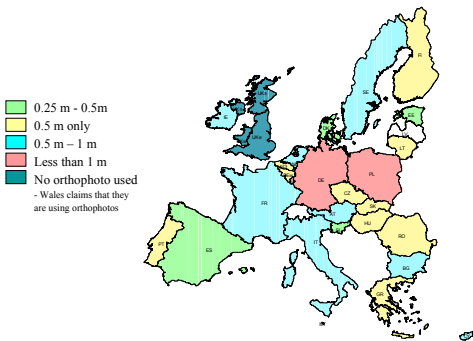


Fig. 3 Ground sampling distance of the orthophoto used in the EU MS

### 3.2.3 Period of production and coverage

In general the orthophotos used for the LPIS should not be more than 5 years old. As the their production is time consuming task, from the point of view of organization, implementation and budget, the creation of orthoimage coverage at national scale required usually several years (especially for large countries). 60% of the MS have orthoimagery elaborated in the period 2002 – 2006. However some MS (HU, NL, BG, LT and PT) have managed to create/update their orthophotos in a short timeframe of 1 or 2 years. There are also cases of MS with quite outdated parts of the orthoimagery, as SE, IT and GR, having

some orthophotos from the late 90s. SI, NL and Flanders have the most recent complete coverage orthophotos, made in 2006.

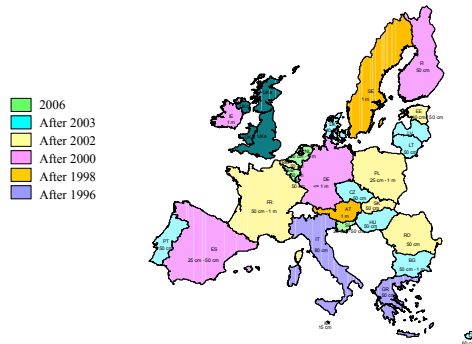


Fig. 4 Year of production of the orthophoto used in the EU MS

### 3.2.4 Plans and strategies for the orthoimage update, potential constraints

The planning of the MS for the future update of the orthoimagery is in compliance with the LPIS requirements. Considering that an annual update of 20-30% of the country is feasible from the technical, financial and organizational point of view, most of the MS have plans to update the entire orthophoto coverage in 3 to 5 years. NL, IE and DK have more ambitions programs to cover their territories with new orthophotos in 2 years. GR and LU claimed that they will have new coverage in 2007. In Germany the strategies varies in the different Landers (with an existing orthoimagery from 2001 – 2006).

Although all MS have straightforward strategy for the actualization of the orthoimage coverage, there are some issues which could put constraints on the smooth updating process. Many MS have still complicated flight clearance procedures (imposed by the relevant military authorities). These administrative requirements create complications also for the tendering process and the preparation of the technical specifications. Another problem is that in many countries, the Ministry of Agriculture or the Paying agency are not entitled to handle the process of orthophoto update, but this task is at the responsibility of other authorities, like the Cadastre Agency (the case in RO). These institutions might have their own approach and planning, sometimes not coherent with the strategy for the LPIS update.

Some MS provided additional information, regarding their plans for orthophoto update. IT has an objective to increase the resolution of the orthophoto to 50 cm. PT plans to use the VHR satellite data from the CwRS campaign to update the orthoimagery.

## 3.3 The Web LPIS

### 3.3.1 LPIS available through the Web

Even if the LPIS is considered only a tool to support the IACS, the data needs to be available to a relatively large user community (farmers, agriculture associations, governmental institutions). The easiest way to provide the LPS dataset is through Web-enabled services. 20 MS have already built such Web systems.

Most the Web LPIS are restricted to farmers and the administration. Some of the restricted Web LPIS are available also to other “non-CAP related” institutions in the government.



Only 6 MS (FR, EE, LV, ES, SI and SK) have Web-enable systems opened to public access. In DE, some Landers have public available Web LPIS, while some other have it restricted.

In BE (Wallonia and Flanders), the Web LPIS is under development and will be operational in 2007-2008, restricted only to farmers. LT implemented in 2006 a Web LPIS in a pilot stage. GR plans to provide LPIS data through internet in future (together with online claims).

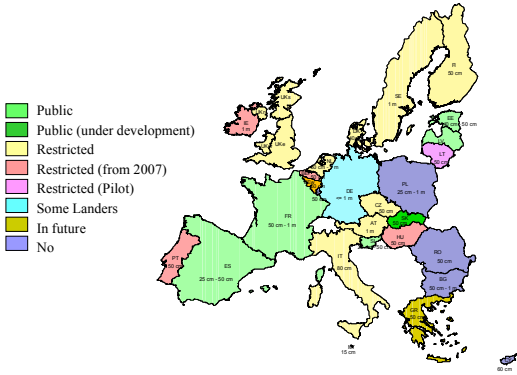


Fig. 5 Web LPIS – Web Sites Available in the EU MS

### 3.3.2 Online claims

There is already a significant number of MS (DK, FR, IT, NL, SE, ES, SI and BE-Flanders) who made the next step toward better optimization of the aid declaration process by implementing online claims. This could show also a high degree of the development of the e-government, as all the legal and organizational base necessary for these electronic services have been adopted. HU, PT and IE will introduce online claims from 2007. SK and BE-Wallonia are still developing this option. In DE, some Landers like Baden-Württemberg and Bavaria have online claims enabled.

## 3.4 Additional Statistical Data

### 3.4.1 Introduction

A special section in the questionnaire was dedicated to some statistical data from the 2005 declaration campaign, which could be used to evaluate the currency of the reference parcels. It is probably the most interesting part of the study, but unfortunately most of the MS were not able to provide such statistics due to the fact that either they don't generate any summarized data or they were still preparing it at the time of the inquiry.

The information received from some of the MS is very interesting, but sometimes not very clear or contradictory. This was probably because, it was not possible to provide correct figures without clarifying in advance the definition of eligibility, the impact of the reference parcel used and the statistical method applied by the particular MS. Further discussions with each country are needed in order to understand better the information provided.

In this respect, it is not possible yet to summarize the data and make some correct evaluation on EU level. However, some preliminary observations are given in the paragraphs below (presented separately for each type of reference parcel).

### 3.4.2 Results for LPIS based on physical block

All MS shows a difference between the total area claimed inside the reference parcels and the total national summary of eligible area. There is 10% to 30% of eligible area, which remains not claimed by the farmers. This could be mainly because a certain number of farmers have not participated in the campaign, but also might indicate that some reference parcels need to be updated. 10% to 35% of the physical blocks were fully claimed, while the reference parcels not claimed at all vary from 20% to 40%.

### 3.4.3 Results for LPIS based on farmer block

For this type of reference parcel, the data provided was quite sparse, however from the information available it could be concluded that the rate of the total area claimed inside the reference parcel, against the national summary of eligible area is much higher, comparing to the physical block system. This could be explained also with the different definition of the farmer block, than the physical one. The reference parcels fully claimed are more than 90% with very few parcels not claimed at all. In CZ, the area claimed is slightly more than national summary, probably due to the fact that new farmers, not presented in the in the LPIS, have provided declarations during the campaign.

### 3.4.4 Results for LPIS based on agriculture parcel

Here, as the previous case, the rate of the total area claimed inside the reference parcel, against the national summary of eligible area is also high (about 90%). However the percentage of the reference parcel fully claimed is much lower for some MS. It is not possible to make clear assumptions on the reason for this observation, without further discussions with the MS administrations.

### 3.4.5 Results for LPIS based on cadastral parcel

Statistical information is provided for CY and PL. The cadastral parcels fully claimed in CY are 36%, while in PL they are 76%. It should be discussed with these MS, if these statistics are based on the total number of cadastral parcels or only on those containing some eligible land. Further analysis on the figures provided for the cadastral LPIS might bring more light to efficiency of using such reference parcels for the declaration process and control.

### 3.4.6 Results of Art 6 (2) testing for 2005

A number of EU MS have provided statistical data on the results of Art 6 (2) testing for 2005, regarding the respect of rule 75%/90%. All of them claimed to have fulfilled it on national, regional (DE, UK and BE) or selected area level (PL). The figures vary from 75% to 100% of the reference parcels having at least 90% eligible area.

There is no detailed information about the methods, the MS Administrations used to evaluate the 75%/90% rule. The only exception is FI, which described that the testing of the rule was made according ISO 2859 standard, part 2 "Sampling plans indexed by limiting quality (LQ) for isolated lot inspection".

### 3.4.7 Land cover and land use data in LPIS

The last point of the questionnaire was concerning the type of land cover / land use defined in the LPIS. Although this question is not directly linked to the strategy of the LPIS update, it might

provide additional information on the content of the LPIS, as an important part of the National Spatial Data Infrastructure.

Most of the MS recorded the information of the land use in their LPIS. Some of them, like PL, CZ, SK, IE and DE, maintain quite detailed information with various land use and crop classes defined. In most of the cases, the MS used similar nomenclature, however it will be interesting to further analyse if the definition or the meaning of the land cover/land use classes is the same in the different countries. This will be important, if the LPIS will be used as a base to generate a detailed land cover/land use database on EU level.

#### 4. CONCLUSIONS

The aim of this study was to provide an overview of the status of the implementation of the LPIS in the EU MS with a focus on the currency of the reference parcels used. It should not be considered exhaustive and complete, but a dynamic document which will be revised and updated regularly with recent and more detailed information.

The data provided by the MS should be discussed and revised deeper in order to evaluate better how the strategies for the LPIS update in the MS are compliant with the EU regulations. Of course the opposite is also valid – some changes in the regulations might be recommended, taking into account the results obtained from the MS applying the existing rules and requirements.

A cross-correlation between the reference parcel and the applied methods of update should be performed. For this purpose, some additional questions should be asked to the MS.

The data given by the MS in the questionnaire is not yet enough to provide clear answers to the questions in point 1.2. However the following could be mentioned:

- The most common methods used by the MS to estimate the currency of the reference parcels are the results from the OTSC and the systematic checks based on new orthophotos, available usually over certain area of the country. Both are based on certain **sample extraction** from the whole database. The question, if this sample is **unbiased and big enough** to provide reliable statistical estimation of rule 75%/90%, still remains.
- Although, the results from the OTSC are broadly used to evaluate the currency of the LPIS, in very few cases the **factors, related to the LPIS** are included in the risk analysis. Is it then appropriate to use the results of the OTSC or a separate sample should be created based on specific **LPIS-oriented risk analysis**?
- If the rule 75%/90% aims to enable proper identification of the agriculture parcels using the reference ones and thus to facilitate the administrative cross-checks (with regards to the “over-declaration”), the **results from the administrative cross-checks** might be more relevant to estimate the compliance of the LPIS to the IACS procedures. As the administrative cross-checks comprise all applications, the statistics could be also more reliable, based on **random sample from the total database**. Some MS

stated that they use the results from the administrative control, but it is not yet clear how they do it.

- The requirement to assess the Art 6 at MS level is not a very flexible tool for some countries. A **stratified per region assessment** might be more appropriate. Based on the statistical data from the declarations, the MS could try also to track geographically the reference parcels, which were under 90% utilised and thus focus the LPIS update on the worst areas.
- From the point of view of the administrative cross-checks (as a primary target of the LPIS), the check on the eligibility could be based on the **claimed area only**. It was evident from the statistics, that there is a certain percentage of reference parcels (particularly valid for physical blocks or cadastral parcels) not claimed at all. However, the LPIS database is migrating already toward a **multi-use and multi-purpose data pool**. This might put additional requirements in favour of the estimation of the currency of the reference datasets, based on the total eligible area.
- In some MS, the LPIS is not more only a supporting tool for the IACS. It is becoming in fact a **Land Management Information System**, providing data to many domains. This probably will change the data model of the system itself, enabling the possibility to integrate other layers of information. This trend might be expected in all EU countries. It is already evident that the LPIS could be the **basic source for NSDI** in the EU, if proper tools for generalization and standardization on European level are created. All this, might require a revision on the way the accuracy and currency of the LPIS is evaluated.

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