LNV Manages European Manure Policy More Efficiently with SAS®

The Dutch Ministry of Agriculture, Nature and Food Quality (LNV) uses SAS® technology in the management of the country's manure policy to detect deviations from specific standards and identify high-risk groups of potential legislation violators.

Industry

Public Sector

Business Issue

Increase effectiveness of administrative and physical inspections of potential manure policy violators by performing risk analyses on all available data in a fast, reliable and transparent manner.

Solution

The Analysis & Selection department uses SAS® Enterprise Guide® and SAS® Analytics Pro to identify high-risk groups for the management of the manure policy demands through statistical analysis, computing power and clear reporting.

Benefits

SAS technology has helped establish a data analysis and selection environment for identification of high-risk groups. The analysis enables queries to be easily modified and re-used. The process is now transparent and traceable, and results presented clearly for administrative and physical inspections.

The Netherlands is among the biggest exporters of agricultural products in the world. Manure legislation was developed in the 1980s for the purpose of keeping the environmental effects of intense farmland use under control. Until 1 January 2006, management of this policy was based on data that the farms themselves registered and supplied. Over the years however, the ministry's control and administrative power declined and a difference arose between the reality and practice. A better and more efficient method of detection and management was chosen for the introduction of the new manure policy in January 2006. The Dutch Ministry of Agriculture, Nature and Food Quality (LNV) wanted to be able to deal in a more targeted way with high-risk companies and to cause as little annoyance as possible with check-ups on companies who do follow the rules. Using statistical analysis of relevant databases and transparent presentation, it is now possible to trace deviations from specific standards and to select high-risk groups of offenders. Based on these results it is then determined whether a company is considered for an administrative or physical inspection. This efficient, flexible analysis and selection process is based on SAS® Analytics Pro and SAS® Enterprise Guide®.

The LNV's Analysis & Selection department provides information for the National Service for the Implementation of Regulations (DR) and the General Inspection Service (AID). This department contributes to observance and maintenance of the manure policy and is responsible for detection and selection of potential violations. The process involves analysing data from various databases of LNV departments and other organisations. The results of the analyses and selections form the basis of administrative audits or physical inspections.

Administrative power

The reason for establishing the Analysis & Selection department was the introduction of the new manure policy in 2006. Kees Kloet, Analysis & Selection team manager, says, "It was clear that the administrative power to manage the old policy was declining; that's why the effectiveness of the inspections had to be heightened. The existing process was time-consuming and expensive and the chance of success was low. That's why management of the new policy was chosen for the programme approach."

Kloet continues, "We work with enormous amounts of data. In the Netherlands alone, for example, there are around 80,000 farm companies. We have various data from those companies, varying from the number of animals on a farm and the surface area of agricultural land to feed data and the manure stock itself. We also include documentation of manure transport and GIS data from parcels and maps in our models, and use various ratios as well. We do risk analyses by comparing all this data and carrying out queries on it. In this way it can be shown that a specific group of farmers are possibly violating the rules."

'Impossible' shipments

Analysis & Selection uses data from a data warehouse with 77 databases. "We set certain standards and calculate them. If we ascertain that a specific group comes out above the set standard we first check to see whether the data is correct by comparing it to other available data. This way we can zero in more closely on an increasingly specific risk group", says Kloet.

"Our analysis and selection process is relatively complex and takes a lot of time. With SAS we are no longer dependent on our ICT department for this and are increasing the effectiveness of administrative and physical inspections at the same inspection capacity."

Kees Kloet
Analysis & Selection Team Manager

The department always checks whether the data provided is plausible. A good example is manure transport. Kloet says, "If a company is generating too much manure this has to be transported to other companies or storage. This transport is expensive and the government has set strict rules to prevent dumping along the way. Only registered transport companies are permitted to transport manure and their vehicles are equipped with ADR (Automatic Data Registration) and GPS. Moreover, all the parties involved are obligated to sign a special transport document. By comparing this document with the ADR/GPS data we are able to ascertain noticeable deviations." For instance, a shipment is classified 'impossible' if there is a discrepancy between the time of departure and arrival and the distance travelled. In some cases the deviation is so great that a lorry cannot have travelled that distance in that time. In 2008 some 2,515 'impossible' shipments were discovered, involving 215 transport companies. Some companies were inspected based on this data and various types of irregularities were discovered.

Powerful statistical analysis

When establishing the department, the ministry was looking for a powerful solution for data analysis and statistical calculations based on large amounts of data, including reporting. Kloet says, "The solution had to work with various types of data sets. Our data comes from various systems and is in a variety of formats, such as Excel, Access, Oracle and even organisation-specific variants. Moreover, the functionality for statistical analysis had to be powerful and flexible. Besides the complexity, it is also difficult to make a good selection, which can comprise of around 50 steps, because the quality of the data isn't always optimal. A list of top 100 - 1,000 suspected companies therefore necessarily contains errors so the query must be quickly modifiable by testing divergent data with other databases, for example. The results of audits and inspections are also included in this. With these modifications we didn't want to have to re-programme from scratch every time."

It was also important for the end users to be able to make the selections and analyses themselves. Kloet says, "Before, we were dependent on a separate ICT department for making queries. That meant that in many cases it took quite a long time for us to receive the results, which weren't always up to our expectations. In order to speed this process up and to operate more flexibly, a user-friendly solution and a good interface with clear graphic capabilities were needed. Finally, it was crucial for all calculations to be clear and easily convertible for the purpose of reliability and transparency, as analyses can have far-reaching consequences for the companies concerned. The process must comply with both organisational and legal requirements which is why every selection is checked by a colleague."

Kloet says, "Speed also played a role, because as a new department we had a clear deadline – one year from when the legislation came into effect. That meant we had to be able to examine manure use and carry out the accompanying complex analyses by 1 January 2007." Implementation went through successfully and, after some training, commissioning was not a problem either. Kloet says, "The results are positive. Our analysis and selection process is relatively complex and therefore takes time and money. But, at the moment the savings on administrative and physical inspections certainly compensate for that. We have succeeded in increasing the effectiveness of the inspections at the same inspection capacity."

An additional advantage is that the expertise and processes are also more broadly employable. Kloet says, "We have access to the databases and the analysis and selection tools for answering quantitative policy questions. We are also capable of monitoring the progress of various regulations carried out by the National Service for the Implementation of Regulations and to provide these results to external organisations such as Statistics Netherlands (CBS), the provincial governments and the European Commission. That way we can expand over time into a competence centre for qualitative data analysis. This makes it clear that in choosing SAS, the LNV has opted for a robust and scalable analytical environment that provides optimal performance in carrying out complex queries to a data warehouse that, for the foreseeable future, will continue growing."