

Σ SIGMA

THE BULLETIN OF EUROPEAN STATISTICS

From farm to fork

Focus on sustainable
agriculture and fisheries
statistics



Editorial



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Sustainable development seeks to meet the needs of the present without compromising the ability of future generations to meet their own needs. It is one of the fundamental objectives of the European Union that environmental concerns should be high on the agenda. Measuring progress towards sustainable development is an essential part of the EU's sustainable development strategy.

Agriculture and fisheries contribute to economic development and lie at the heart of sustainable development. Farming puts food on the table and has also played an important role in the creation and maintenance of Europe's unique countryside. There are also strong links between agriculture and fisheries, the environment and public health.

This issue of *Sigma* describes some of Eurostat's work in the area of sustainable agriculture and provides information on underlying policies. Articles describe how Eurostat works with sustainable development indicators, as well as agri-environmental ones. Readers will get acquainted with our work on organic farming, plant protection, food safety, the land use/cover area frame survey and sustainable fishery statistics.

On the policy side, staff of Eurostat's main partners, the European Commission's Directorates-General for the Environment, for Agriculture and Rural Development, and for Maritime Affairs and Fisheries, describe how they work and how they use European statistics. They explain how statistics play a role in assessing different policies, measuring causality and planning for the future. It is also pointed out that even the fact of setting up indicators is useful. To define what exactly will be measured — concepts and definitions — helps focus policy.

Sigma also describes how the European Environment Agency tackles agri-environmental data needs and how the Council for the Exploration of the Sea works to provide policymakers with information and analysis related to the marine environment and fisheries.

Member States with a high profile in sustainable agriculture and fisheries are also portrayed in this issue of *Sigma*. You can read about a unique cooperation in Poland on plant protection statistics, the challenges in collecting organic farming data in Italy and fishery statistics in Spain. A further article explains the complexities of the food security issue in the United Kingdom.

Finally, the United States Department of Agriculture's work in the field of sustainable agriculture is described.

Previous issues of *Sigma* have presented all the European Union national statistical institutes. Now, we are happy to introduce Statistics Canada and describe how they produce and disseminate their statistics. We close the issue with a feature on the celebration of 150 years of official statistics in Romania.

Walter Radermacher
Eurostat Director-General

Editorial



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THE BULLETIN OF EUROPEAN STATISTICS

Produced by Eurostat

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Published by: the Publications Office of
the European Union, Luxembourg, 2010
ISSN 1018-5739

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Graphic design by Jouve, France

© Cover photos: Phovoir and Krav José
Barrios Lancellotti.

Printed in Belgium

PRINTED ON WHITE CHLORINE-FREE PAPER

Sigma is available free of charge from:
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LUXEMBOURG

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All issues of *Sigma* can be consulted
online at Eurostat's website
(<http://ec.europa.eu/eurostat>).

We would like to thank all those who
have contributed to this edition of *Sigma*:
Miguel Ángel Cordón, Anna Barnett,
Grażyna Berent-Kowalska, Angel Calvo
Santos, Marleen De Smedt, Pedro
Díaz Muñoz, Matthew Elliot, Marcel
Ernens, Maurizio Esposito, Michael S.
Hand, Marjo Kasanko, Hans Lassen, Erik
Lindebo, Graham Lock, Jock Martin,
Ana Martínez Palou, Pierre Nadin,
Stuart Platt, Elisabeth Rohner-Thielen,
Marta Romeo, Johan Selenius, Munir
A. Sheikh, Stanisław Stobiecki, Vincent
Tronet, Thierry Vard, Gita Vergina, Vergil
Voineagu, Nikolaus Wurm, Franco
Zampogna.

The views expressed in *Sigma* are
those of the authors, and do not
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of the European Commission or the
organisations to which the authors
belong.

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Supporting sustainable agriculture policies with multiple statistical answers

'Our job at Eurostat is to support policymakers with basic, high-quality statistics and precise indicators which measure the impact of farming on the environment. The information should also enable the assessment of agricultural and environmental policies,' said Pedro Díaz Muñoz, Eurostat Director for Sectoral and Regional Statistics.



Pedro Díaz Muñoz, Eurostat
Director for Sectoral and
Regional Statistics

gricultural and non-agricultural activities in rural areas is also a matter of concern for policymakers,' he said.

Indicators at the top of the pyramid

Eurostat's response to sustainable agriculture goes in several directions. Eurostat is committed to regularly producing

Sustainable farming aims at obtaining a balance between the benefits of agricultural activities, such as food production, landscape preservation and biodiversity, and negative pressures, such as erosion, emissions, eutrophication and reduced quality of air, water and soil.

'It is also important to keep in mind that agricultural activities are strongly linked to other sectors of society. Farming does not only affect the future of farming, but areas such as public health and the environment as well,' said Mr Díaz Muñoz.

'In addition, the environment is a major political and social concern. Issues such as the destruction of biodiversity, depletion of natural resources and climate change are of the highest political priority. In particular, agricultural activities impact — and are impacted by — the environment, and statistics have to measure all these interrelations,' Mr Díaz Muñoz continued.

'Therefore, the EU's common agricultural policy does not only focus on production. Finding the right balance between ag-

28 agri-environment indicators, which have been agreed by the European Commission. They provide information on the impact of policy, on land use, on the use of pesticides, fertilisers and chemicals, on emissions and on farm management practices (see further information on page 15).

'These indicators are at the top of the 'statistical pyramid'. The basis of the pyramid is made up of a large amount of detailed data obtained from different sources, which are used for analysis,' said Mr Díaz Muñoz.

The largest source of information is the farm structure survey, which is conducted every three years. The next round, which will take place in 2010, will be a full census operation. It will provide detailed information of all agricultural holdings in the EU and will also include a special survey on agricultural production methods.

The second source is the land use/cover area frame survey (LUCAS), which gives a snapshot of how land is used today in the EU (see further information on page 18). LUCAS is an

on-site operation, which means that data are collected in the field from preselected sample points. These data are complemented with more general data from the European Environment Agency's land cover survey.

The third major area relates to plant protection products, where a new regulation will permit the development of a set of data on pesticides and their impact on the environment and health (see further information on page 24).

Together with Member States, Eurostat also elaborates 'agricultural economic accounts' which are a satellite account to the national accounts. These data provide an overview of agricultural activities. The main purpose is to analyse the production process and primary income generated by agricultural activities and to try in a more coherent way to measure their impact on the economy and the environment.

'For many years, Eurostat has also collected data on organic farming, which is an area of growing importance in the EU. Twenty per cent of the EU's arable land is "organic" today and harmonised EU rules guarantee the authenticity of organic products and allow us to produce comparable statistics,' said Mr Díaz Muñoz.

Finally, Eurostat has one of the world's biggest databases on fishery and aquaculture production. These data are, for example, essential for monitoring the status of fish stocks.

'Currently, there are no specific indicators related to organic aquaculture production, but they will certainly come in the future. Discussions on the statistics needed for such indicators have already started in several international fora,' said Mr Díaz Muñoz.

Keeping legislation up to date

One of the challenges in the area is to adapt legislation to changing needs. Historically, EU agricultural law focused on production and consequently it provided detailed data on production. Time series are long and provision of data is stable.

'There is substantially less legislation which deals with the impact of farming. This phenomenon is also more complicated to measure, but when agricultural policies enlarge their scope, statistics have to follow,' said Mr Díaz Muñoz.

In parallel, efforts to simplify statistical legal requirements are ongoing. Eurostat and national statistical organisations



Efforts to simplify statistical legal requirements are ongoing. Recent legislative initiatives will reduce information demands. Both the frequency and the level of detail of the datasets have been reduced.

have agreed on a strategy for the future of agricultural statistics. Recent legislative initiatives, such as the one planned on permanent crops, which will replace legal acts on orchards and vines, will reduce information demands. The frequency of requested datasets have also been cut in many other areas. The farm structure survey is, for example, now carried out every third year, instead of every second year as in the past.

EU statisticians are sometimes criticised for moving too slowly. However, Mr Díaz Muñoz said that developing new legislation and launching new data collections are time and resource consuming.

'To find the best and most effective way to collect new data, we need to do research and pilot studies. Furthermore, we need to get all 27 EU countries onboard and the negotiation process can sometimes be time consuming.'

Vision of the future

According to Mr Díaz Muñoz, there is a need to better capture the links between the environment and agriculture in the future. Current sector statistics give a partial picture. To estimate the impact of greenhouse gas emissions from agricultural activities, statistics on livestock, waste, production methods and land use are necessary. However, statisticians



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According to Mr Díaz Muñoz there is a need to better capture the links between the environment and agriculture in the future, as current sector statistics only give a partial picture.

cannot estimate the impact climate change will have on agriculture in the future, nor can they assess the effects of mitigation measures, which have already been taken, with current methods and data.

'A more holistic approach that focuses on measuring and combining outputs from different data collections will be required. While sound frameworks — in the form of satellite accounts — should be developed in the medium term, basic statistical datasets should be made available as they are produced,' said Mr Díaz Muñoz.

'Furthermore, environment and agriculture have a strong territorial component. It is, therefore, important to analyse data at a detailed geographical level. To make this possible, a large amount of individual information should be linked to its geo-reference. In parallel, disclosure control methods

should be developed to protect the confidentiality of respondents.'

Finally, Mr Díaz Muñoz said that any increase of statistical needs should be compensated by developing more efficient production methods which optimise the use of existing information such as administrative sources.

'This will, on the one hand, reduce response burden, but may, on the other hand, hamper the quality and increase production costs at the statistical organisations. Therefore, methods and tools will have to be implemented to tackle these problems. The collaboration amongst partners in statistical production will be essential to achieve the critical mass needed for all these activities,' concluded Mr Díaz Muñoz.

By Annika Östergren Pofantis, Eurostat Communication Unit

Monitoring sustainable development in the European Union

Sustainable development (SD) is a fundamental and overarching objective of the European Union and monitoring progress towards this goal is a central part of the EU's SD strategy. Therefore, Eurostat, together with the Member States, has developed a set of sustainable development indicators, which is used in the assessment of whether Europe is on a sustainable path. Agriculture, forestry and fisheries are not treated as separate themes, but cut across many of them.

Nikolaus Wurm, then Head of Eurostat's Key Indicators for European Policy Unit.



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Sustainable development can be defined as meeting the needs of the present generation without compromising the ability of future generations to meet their own needs. It is a vision of progress that links economic development, protection of the environment and social justice, and therefore concerns all citizens of the EU, and indeed the whole world.

The EU's sustainable development strategy sets out a single, coherent approach on how the EU will more effectively live up to its commitment to meet the challenges of sustainable development. Reporting progress towards agreed goals is an integral part of the strategy.

'To measure progress we have, together with other European Commission services and the national statistical institutes in the Member States, developed around 140 indicators, which are divided into 10 themes covering the many dimensions of sustainable development,' said Nikolaus Wurm, then Head of Eurostat's Key Indicators for European Policy Unit.

The themes comprise socioeconomic development, climate change and energy, sustainable consumption and production, natural resources, sustainable transport, public health, social inclusion, demographic change, global partnership and good governance. Data mostly come from other Eurostat units, but also from outside sources, such as other European Commission services, international organisations and scientific bodies.

Data providers within Eurostat also provide methodology, definitions and metadata. Eurostat has the responsibility to provide guidance for the use and analysis of the indicators as well as information as to how the indicators had been selected.

'Our unit does not collect any data. We reuse what others have collected. Our reasoning is that the specialist units understand issues in their area better than us and can better judge if data are timely and of high enough quality to be used for the sustainable development indicators,' said Graham Lock in Mr Wurm's unit.

'One of the indicators we use to assess management of renewable natural resources is "fish catches taken from stocks outside safe biological limits". This indicator comes from the International Council for the Exploration of the Sea and aims at measuring whether fish can replenish themselves. But the indicator combines statistics on catches with expert opinion on biological limits and is therefore not perfectly objective. This makes it essential that users are provided with the necessary information on quality,' Mr Lock continued.



Vincent Tronet, Head of the Indicators for Long-Term Developments Section in Eurostat's Key Indicators for European Policy Unit, and Graham Lock from the same unit.

All indicators have a quality profile

'The objective is for all of our sustainable development indicators to have a quality profile, including those that stem from sources outside the European statistical system,' said Vincent Tronet, head of section in the unit.

'The quality profile does not only include information on timeliness, accuracy, comparability and relevance, but also information on how the indicator could be improved as well as the development towards this goal,' he continued.

There are three classes of indicators. The first includes about 130 indicators which are produced and published, covering issues such as agricultural subsidies, organic farming, what people eat and the size of the fishing fleet of the EU Member States.

The second includes indicators which Eurostat and the Member States agree would be useful to have and feasible to develop. An example of an indicator 'under development'

Ten themes

The sustainable development indicators are divided into 10 themes, linked to the key challenges of sustainable development in Europe:

1. socioeconomic development
2. climate change and energy
3. sustainable transport
4. sustainable consumption and production
5. natural resources
6. public health
7. social inclusion
8. demographic change
9. global partnership
10. good governance

Indicators and methodological information are available on Eurostat's 'Sustainable development indicators' webpages:

<http://ec.europa.eu/eurostat/sustainabledevelopment>



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Sustainable development can be defined as meeting the needs of the present generation without compromising the ability of future generations to meet their own needs.

linked to sustainable agriculture, would be the percentage of land which risks soil erosion. These indicators are researched by Mr Wurm's team together with specialists in other Eurostat units, Commission directorates-general, universities and other organisations. Currently a 'soil erosion indicator' is being developed and tested by the European Commission's Joint Research Centre.

The third group includes those indicators which could be developed in the future, ranging from effective fishing capacity and quotas, pesticide residues in food to sales of Fairtrade and share of eco-labelled products.

There is a section on Eurostat's website where indicators and other material related to sustainable development can be found. Every two years a special monitoring report is published, which gives an objective picture of what Europe has achieved in recent years. The report, along with reports from Member States, is the basis for the European Commission's

assessment of the implementation of the SD strategy and is regularly discussed by the Heads of State or Government at the December European Council.

More precise indicators

In the future Eurostat does not wish to develop more indicators, just more precise ones.

'Today we use some "proxy" indicators, which do not reflect exactly what we wish. This is due to the lack of comparable and high-quality data. To monitor fishing capacity, for instance, we use the size of the fishing fleet, which is not optimal, but it is the best indicator that exists at the moment,' said Mr Wurm.

*By Annika Östergren Pofantis,
Eurostat Communication Unit*

The reformed CAP and the use of agri-environmental indicators

With the European Union striving towards a sustainable society, rural development and environmentally friendly agriculture have gained importance. This changing perspective is clearly manifested in the common agricultural policy (CAP), which now links agriculture and the environment closely together. *Sigma* met Thierry Vard of the European Commission's Directorate-General for Agriculture and Rural Development to talk about the evolution of the CAP and the increased use of agri-environmental statistics.

Thierry Vard, responsible for the Rural Development Analysis Section at the European Commission's Directorate-General for Agriculture and Rural Development.



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When the CAP was founded in the late 1950s, the main objectives included higher agricultural productivity, price stability and a secure supply of agricultural products. Its scope has widened considerably since then. Nowadays, rural development and environmental issues are equally important. New policy measures are created along the way to meet new objectives and, more importantly for Eurostat and other statistical institutes, new indicators are demanded to assess these new measures.

'Our concern for the environment is not new. Already in 1972 we saw that our policy for structural change, which then aimed at fewer and larger farms as well as higher productivity, could lead to a situation where less productive land was abandoned,' said Mr Vard.

The EU responded to this problem with a measure called the compensatory allowances for less favoured areas, and Eurostat began to collect information about these less favoured areas in its surveys on agricultural holdings. Twenty years later, at the beginning of the 1990s, an environmental problem arose which was the opposite of land abandonment. It appeared that land was too intensively used in some areas. New policy measures were introduced, for example, to reduce the use of fertilisers where they lead to a deterioration of water quality. This time Eurostat began production of manure storage data to help monitor this usage.

Radical reforms of the CAP

After a period of progressive changes to the CAP in the 1970s and 1980s, aimed at limiting the overproduction in

some sectors, radical and wide-ranging reforms were introduced with the 'Mc Sharry reform' in 1992. They were extended by Agenda 2000 in 1999 and its revisions in 2003 and 2004. These reforms increased the importance of rural development and integrated environmental concerns into the CAP. Decoupling and cross-compliance were important changes.

Decoupling meant that direct aid to farmers would no longer be linked to agricultural production. Cross-compliance meant that farmers, in order to get their aid, had to comply with a list of environmental regulations regarding the environment, food safety, and animal and plant health as well as with requirements to keep farmland in good agricultural and environmental condition.

'Following the European Council meeting in Cardiff in 1998, DG AGRI issued a communication "Direction towards sustainable agriculture" in 1999, in which the need to develop agri-environmental indicators was stressed. Work has continued in this field, leading to a pilot operation named IRENA, to measure the relationship between agriculture and environment,' said Mr Vard.

The IRENA project (indicator reporting on the integration of environmental concerns into agriculture policy) listed 35 agri-environmental indicators that would be used to monitor the integration of environmental concerns into the CAP. The indicators originally listed, have become part of the 28 agri-environmental indicators that Eurostat is currently developing together with other EU bodies (see the article on page 15).



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According to Mr Vard, biodiversity and climate change have become two increasingly important topics for which more statistics are needed. 'We want to better measure the effect of climate change on agriculture and find out how the agricultural sector could contribute to mitigate climate changes,' said Mr Vard. Pictured is a farmer on Samsøe, Denmark. The island is known for being a self-sufficient community in renewable energy.

'We want to use these agri-environmental indicators to assess the impact of policy decisions on the environment. As stated in our first communication from 1999, we need to look at the situation at a local level. However, several indicators are currently only available at national level,' said Mr Vard.

More changes to the CAP were introduced in the so-called 'health check,' agreed by the EU agriculture ministers in 2008. Among other things, direct payments to farmers were further reduced. This money was transferred to the Rural Development Fund, in a process known as modulation, where it would be used for new challenges such as climate change, protection of biodiversity, water management and production of renewable energy.

'Biodiversity and climate change have become two very important topics and we need more statistics in these fields. We want to monitor the development of high nature value areas, such as grassland, as well as the more intensively farmed areas, where rural development policy supports many initiatives. We also want to better measure the effect of climate change on agriculture and find out how the agricultural sector could contribute to mitigating climate changes,' said Mr Vard.

Planning for the future

The next adjustment of the CAP will take place in the context of the EU financial perspective 2014–20. To prepare for this, a set of indicators has been defined in the common monitoring and evaluation framework of the rural development

policy and agreed upon by the Commission and the Member States. For instance, in the field of biodiversity, the programmes will be evaluated using impact indicators measuring the number of farmland birds and the maintenance of high nature value farmland.

'We are facing several problems and, unfortunately, sufficient information will not be available for the preparation of the financial perspective review that has already started. An example is the farmland bird index which measures the number of birds in a certain area. We need to know all the variables to distinguish between the impact of agricultural practices on the bird index and the impact of other factors, such as weather conditions and urbanisation,' said Mr Vard.

A problem, according to Mr Vard, is that not enough data are available at local level. Detailed information on farming practices was once collected regularly in the Member States. The collection of this information came to an end when farmers' payments were decoupled from their production. In order to regain this information, Mr Vard would like to see new questions on farming practices added to the next round of farm surveys.

'Detailed information on the farm level is necessary. Without this type of information it will be difficult to continue to adjust the CAP and efficiently monitor the environment,' concluded Mr Vard.

*By Johan Wullt,
Eurostat Communication Unit*

The European Commission's Environment DG: 'Indicators — a crucial part of the policy jigsaw'

The EU's common agricultural and rural development policies are managed by the European Commission's Directorate-General for Agriculture and Rural Development, and followed closely by its Environment DG. 'Our job is to discuss and negotiate with the Agricultural Service, as well as the Member States, how agricultural and rural development policies can be made more environmentally friendly,' said Anna Barnett, Deputy Head of the Agriculture, Forest and Soil Unit at the European Commission's Directorate-General for the Environment.

Rural development, farming and the environment are strongly linked. Over 91 % of the EU's territory is rural and more than half of this land is farmed. Rural areas are also home to more than 56 % of the EU's population.

Farming has contributed, over the centuries, to creating and maintaining a variety of landscapes and habitats which today are home to rich wildlife. However, more intense agricultural methods have increased the pressure on the environment. To help preserve environmentally friendly farming systems, and to counterbalance some of the negative effects of today's more intensive farming methods, agri-environmental measures, including organic farming, have been developed. A tool called 'cross-compliance' has also been introduced. Cross-compliance means that farmers have to comply with some basic environmental requirements to receive payments from the EU Agricultural Fund. It also means that farmers who choose to do more for the environment are given more money.

'The aim is a "sustainable agriculture", which means that we manage today's resources so that they are also available in the future. It implies that the agriculture sector performs its tasks with a view to protect, preserve and improve the quality of water, air, soil and the abundance of biodiversity, as well as the EU's landscapes,' said Ms Barnett.

Greening agriculture

'When it comes to the common agricultural policy, the Environment Service seeks to influence different areas to make them greener. As well as looking closely at major reforms of the common EU agricultural policy, we also look at specific parts of agricultural policy whenever they change, such as the direct payment system, or at incentives for producing fruits and vegetables in a more environmentally friendly way.'

In general, the move to direct payments, thus paying farmers instead of paying for their production, has been good for the environment. It has taken away one incentive to intensify farming practices.

'However, we need to follow changes in policy closely, because even when they are meant to be good for the environment, they can in certain cases have a reverse effect and lead to loss of biodiversity,' Ms Barnett said.



The European Commission's Environment DG seeks to influence the EU's agricultural policy to make it 'greener'. It looks at major reforms as well as specific parts of agricultural policies, such as incentives for producing fruits and vegetables in a more environmentally friendly way.

One example to quote could be the time when payments per head of cattle and sheep in remote areas changed to direct payments based on historical production. This meant that the incentive to keep livestock in remote areas declined, which had an impact on the biodiversity and landscape as fewer animals grazed there than before.

'In some cases, the reduction in grazing pressure was good for the environment, but in many cases it led to a loss of wildlife which had developed symbiotically alongside traditional farming systems and could have hastened marginalisation and abandonment.'

Ms Barnett said that the areas in focus have changed over the years.

'In the environment, targets change all the time. A decade ago the big issues tended to be biodiversity, water quality and landscape. Since then climate change has entered the scene. Other issues have also become more acute — such as water quantity and soil.'

The team members also need to keep their eyes open for unexpected issues. In 2008, Member States decided to abolish the obligation to set aside 10 % of arable land. The set-aside obligation was not intended as an environmental tool, but it had in fact had major benefits for biodiversity and water quality. Set-aside land was spared intensive farming methods, pesticides and fertilisers and these areas had become a haven for a rich flora and fauna which were finding it increasingly difficult to survive on modern intensive farms.

'Now that the set-aside land is no longer obligatory, we need to look at rural development programmes and see how we can create incentives for farmers to set aside land anyway or create similar habitats,' Ms Barnett said.

When it comes to rural development programmes, the Environment DG helps the Agriculture and Rural Development DG examine the Member States' proposals to see whether these actions are good for the environment and whether actions are targeted at those areas which are most problematic in that particular country.



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The European Commission's Environment DG closely follows agricultural policy changes 'because even when changes are meant to be good for the environment, they can in certain cases have a reverse effect and lead to loss of biodiversity,' Anna Barnett said.

'We can challenge a country's proposal and ask why they have not included any actions on soil erosion or high value nature areas, if these are issues which need to be addressed in the country. Negotiations can be pretty detailed as we sometimes need to discuss, for example, dates for mowing grasslands, due to the hatching of eggs or migration of birds.'

'Setting up indicators focuses policy'

Ms Barnett said indicators are 'a crucial part of the policy jigsaw' and essential for assessing whether proposed actions are well designed for meeting environmental challenges. They are also an important tool for identifying hot spots in the Member States and ensuring that support goes to the right place.

'Agri-environmental indicators are extremely helpful in assessing trends in the environment, and can, over time, show how policy is helping; for example, how the quality of water is affected by measures to cut nitrogen,' she said.

Today there is a dedicated set of agri-environmental indicators called IRENA, which includes 28 agri-environment indicators in total, some of which are already used and some of

which are still being developed. Some need to be improved, as there might only be data at national level but regional data would be necessary to make a useful analysis.

'Behind each indicator there is a whole layer of policy issues. In fact even the process of setting up indicators is useful. To define what exactly will be measured — concepts and definitions — helps focus policy. And definitions have to be right, because if the basis of the indicator is not good, it will not be a useful tool for us,' Ms Barnett said.

In general, the Environment DG would like to have more data and to be able to draw information from existing datasets, such as the farm structure survey, combine it with other datasets, and rework the data to fit environmental purposes.

'It would be lovely to be able to draw from all such datasets and use the information for the environment, but technical, quality and sometimes legal issues can make this difficult. Nevertheless, we have to continue to improve data so as to protect and enhance the environment and ensure that public spending is delivering value,' Ms Barnett concluded.

*By Annika Östergren Pofantis,
Eurostat Communication Unit*



'In the environment, targets change all the time. A decade ago the big issues tended to be biodiversity, water quality and landscape. Since then, climate change has entered the scene,' said Anna Barnett.

Agri-environment indicators: essential tools to assess EU agricultural policy

In the last decade the European Union has focused on making agriculture more sustainable and integrating environmental concerns into the Union's agricultural policy. The aim is to head off the risks of environmental degradation, while encouraging farmers to continue to play a positive role in the maintenance of the countryside and the environment. In order to assess the interaction between agriculture and the environment and to develop correct policies, Eurostat, together with other European Commission directorates-general, has begun to develop a set of sustainable agriculture indicators.



Johan Selenius, Agri-environmental Indicators team leader and Marcel Ernens, Head of Eurostat's Farms, Agro-environment and Rural Development Unit.

'We also need the indicators to assess the impact of policy decisions, to identify shortcomings in current measures and to pinpoint the need for new initiatives. Data are also required to improve the targeting and tailoring of measures to local conditions,' said Johan Selenius, Agri-environmental Indicators team leader in Mr Ernens's unit.

Easy to do? No. Collecting and measuring of the interaction between agriculture and the environment is complex. Mr Selenius mentioned measuring of agriculture's share of greenhouse gases and its impact on global warming as an illustrative example.

'In order to assess the impact of cattle, it is important to know the race of the cow, how it is fed, in what kind of building it is kept, how much manure the cow produces, how the manure is stored, how the manure is spread as well as the time of the year it was spread. All these things impact how much greenhouse gases are finally emitted into the air,' said Mr Selenius.

Twenty-eight agri-environment indicators

Eurostat, together with the European Commission's Environment and Agriculture and Rural Development DGs, the Joint Research Centre and the European Environment Agency, started to collect data on 28 agri-environment indicators in 2006, after the Commission had issued a communication on the subject, based on earlier pilot projects.

The idea behind the revamp of the EU's agriculture policy has been to remove incentives which have encouraged farmers to raise more livestock and grow more crops than the market demands. Therefore, incentives to intensify the production process have been removed in the new agricultural policy and payments to farmers are no longer linked to the production of specific crops or breeding of animals. Member States also set environmental standards, which farmers should follow as a condition for benefiting from financial support, the so-called cross-compliance. One example is to respect a maximum permitted volume of fertilisers and another to respect specific conditions for the cultivation of sloping lands. Furthermore, countries can shift payments from market support policies to agri-environment measures.

'Due to the shift in the EU's agriculture policy, we need to better monitor changes in the agriculture production systems and land use patterns, as well as the policies' positive and negative effects on the environment,' said Marcel Ernens, Head of Eurostat's Farms, Agro-environment and Rural Development Unit.

The indicators are meant to address precise questions related to agricultural driving forces, pressures and benefits, the state and the impact on habitats and biodiversity as well as agri-environment policy responses.

The indicators will help understand how regional farming patterns are developing. They will help assess whether policy or production changes pose risks to the conservation of the environment, or, if they are contributing positively to the preservation and enhancement of environmental resources.

'We will also know the state of different environmental resources and will be able to focus on the effects of agricultural activities on regional or local environmental resources, as well as the global impact,' said Mr Ernens.

Finally, the indicators will help assess if agri-environmental policies respond quickly enough to environmental concerns and how changes in, for example, technology affect the system.

The five EU bodies work closely together and Eurostat is responsible for the overall coordination and long-term development of the indicator system. Each service is in turn in charge of developing a number of indicators. Eurostat is, for example, responsible for the indicators related to the European statistical system and the Joint Research Centre is in charge of those indicators which rely on pan-European geo-environmental databases or where models need to be built or research undertaken. The Agriculture and Rural Development DG works with those indicators which are based on administrative information which the directorate-general collects. The Environment DG takes the lead of those indicators where the policy development has been assigned to them, for example on pesticide use, and the European Environment Agency is in charge of those indicators associated with data flows linked to its network Eionet, which includes around 900 experts and more than 300 national institutions.

Twenty-eight new agri-environment indicators will help understand how regional farming patterns are developing. They will help assess whether policy or production changes pose risks to the conservation of the environment, or if they are contributing positively to the preservation and enhancement of environmental resources.



At the moment Eurostat and the other services are consolidating the selected set of indicators and extending the coverage to all European Member States. Work is also done to improve concepts and methods and to find new data sources or better access to existing data.

Regional data essential

Today 6 of the 28 indicators are ready to use (see box), with well-defined concepts and measurement and with data available at the appropriate regional level.

For many of the other indicators, such as nitrogen balance, energy use, soil erosion and water quality, the availability of regional data is the main issue and needs to be developed. Regional data are of particular importance for agricultural data and especially for the new risk indicators, because Eurostat and the Member States will need to define hotspots and evaluate if policies are efficient, or not, on a finer geographical level.

'The impact of the same amount of fertiliser is quite different in the French regions of Brittany and the Central Massif. Policymakers also need to see if policies need to be directed to those farmers who are close to water — because of a greater risk of leakage of fertilisers and pesticides — or to all farmers,' said Mr Selenius.

Farm structure survey as the basis

The main source for Eurostat's agricultural statistics is the farm structure survey, which is carried out every three years. Crop and animal production data, agricultural monitoring statistics, and the land use/cover area frame survey (LUCAS) are also important. These 'regular' data sources will be used for the agri-environmental indicators as well as the other partners' databases.

However, there are still many gaps to be filled. One solution has been to attach a module on production methods to the farm structure survey which will be carried out in 2011. It will make available data on, for example, tillage methods, animal

Operational agri-environment indicators

- Agricultural areas under EU nature protection (Natura 2000)
- Area under organic farming
- Irrigation, for example areas and crops which are irrigated
- Intensification/extensification, for example trends in the share of agricultural area managed by low-input, medium-input or high-input farm types
- Specialisation — share of specialised farms
- Share of agriculture in greenhouse gas emissions



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The main source for Eurostat's agricultural statistics is the farm structure survey, which is carried out every three years. Crop and animal production data, agricultural monitoring statistics and the land use/cover area frame survey (LUCAS) are also important.

husbandry, manure storage and irrigation. A new regulation on pesticide statistics will also provide important data (see the article on page 24).

'Existing data sources as well as administrative sources will be explored to the fullest and modelling will be used as much as possible, but unfortunately we will need a few more surveys,' said Mr Selenius.

He said that Eurostat and its partners are conscious of the potential burden on farmers and always think about how to collect data without disturbing the farmer.

One potential source could be the information farmers are obliged to keep for the cross-compliance controls. In some countries, farmers are, for example, required by law to keep book over how much manure and fertilisers they use and how they use them. However, normally the information is only used if the farm is inspected.

'In Finland the Statistical Branch of the Ministry of Agriculture is carrying out a pilot study on how to use this information, which reduces the burden for farmers as they do not have to

provide the information twice. Furthermore, most farms in Finland use computers, which means the information is digitalised. Therefore, statisticians could extract the information directly from the source. In return, farmers would be given feedback on how much fertiliser they use compared to other farmers, which in the end could save them money.'

Early days

Mr Selenius said that the agri-environmental system is still in its early days. The long-term objective is to have a stable arrangement which provides all the necessary data for the indicators within five years.

'But, already before that, we should have a database, an indicator section on Eurostat's website, factsheets with definitions and metadata, and a regular publishing policy. We will, therefore, be able to better monitor the impact of agriculture on the environment.'

*By Annika Östergren Pofantis,
Eurostat Communication Unit*

LUCAS — a multi-purpose land use survey

The land use/cover area frame survey (LUCAS) was initially developed to deliver, on a yearly basis, European crop estimates for the European Commission. With time, the survey has become essential in providing policymakers and statisticians alike with increasing amounts of data on different forms of land use in Europe and proved to be a useful tool in the area of environmental monitoring. *Sigma* asked Marjo Kasanko from Eurostat's Farms, Agro-environment and Rural Development Unit to explain the origins, purpose and the future development of LUCAS.



Marjo Kasanko from Eurostat's Farms, Agro-environment and Rural Development Unit.

Based on the experience gained during the pilot phase (2000–07), initially involving 13 to 15 EU Member States (the first survey was held in 2001), a new LUCAS survey is currently under way. It is the largest LUCAS survey ever carried out, with 25 EU countries involved (Cyprus and Malta are not included because of their size) and over 230 000 survey points to be visited by the surveyors in the years 2008 and 2009.

'The 2008 and 2009 survey points, designed by Eurostat, include many survey points from the previous LUCAS 2006 pilot survey, so that we can track the changes in land cover and land use over time,' said Ms Kasanko. 'The results will be reliable at EU level down to regions and provinces (so-called NUTS 2 and NUTS 3 levels), depending on the country.'

Ms Kasanko explained that as far as resulting statistics were concerned, the dataset would be unique. 'The data are fully harmonised because the same definitions and the same methodology are used across Europe. Additionally, thousands of photos taken by our surveyors will create a separate, invaluable database.'

Flexible surveying methods

According to Ms Kasanko, the future of the survey looks very promising. LUCAS is fast becoming a multi-purpose platform with land cover and use data as its core activity. Flexible modules dealing with more specific themes, such as soil and biodiversity, would increasingly be integrated into the survey.

'The LUCAS project was put into operation following the decision of the European Parliament and the Council in May 2000,' said Ms Kasanko. 'From the start, it aimed to develop a standard survey methodology (including sampling plans, nomenclature and data collection processes) that would allow us to obtain harmonised estimates of the land cover and land use at EU level.'

'Perhaps one of the most interesting things about LUCAS is the fact that while conducting the survey, the surveyors do not ask any questions of the local residents, land owners and users. Instead, while visiting their assigned geographical spots, the surveyors record, also by taking photographs, what they encounter. This way we see whether the place is a town, field, forest or grassland. What is more, we can then differentiate whether the grass is a field, a lawn or a golf course,' said Ms Kasanko. 'This approach means that we create a minimum disturbance to land owners and farmers.'



© LUCAS — Eurostat

The land use/cover area frame survey (LUCAS) provides data on different forms of land use. Surveyors visit precise geographical spots and record, also by taking photographs to the north, east, south and west, what they encounter. 'This way we see whether the place is a town, field, forest or grassland. What is more, we can then differentiate whether the grass is a field, a lawn or a golf course,' said Ms Kasanko. The surveyors also walk 250 metres in one direction and report exactly what they find in their way, which gives a linear description of the landscape.

'In 2009, for the first time, an ad hoc exercise called "LUCAS Soil 2009" was conducted. It will result in approximately 20 000 random soil samples being collected by the LUCAS surveyors at points of their visit and later analysed in a soil laboratory. The data will be used for assessing the quantity of organic carbon in soil and for updating the European soil map. This exercise is jointly organised by some of the main LUCAS data users — Eurostat, the Commission's Directorate-General for the Environment and the Commission's Joint Research Centre,' explained Ms Kasanko.

'The demand for national and particularly regional land cover/use statistics is growing fast,' said Ms Kasanko. 'In addition, data on land cover and land use are needed for various essential environmental and economic projects. Many of these are linked to the sustainable use of resources and to climate change.'

*By Lukasz Augustyniak,
Eurostat Communication Unit*

Organic farming statistics — setting higher standards

Organic farming is an agricultural production method which places the highest emphasis on environmental protection and animal welfare considerations. It avoids or largely reduces the use of products authorised in conventional agriculture, such as synthetic pesticides, herbicides, chemical fertilisers, growth promoters such as antibiotics, and genetically modified organisms. For a number of years now, Eurostat has been collecting data on organic farming, yet a lot still remains to be done, as Marleen De Smedt, Ana Martinez Palou and Elisabeth Rohner-Thielen from the Health and Food Safety Unit at Eurostat told *Sigma*.



Marleen de Smedt, former Head of the Health and Food Safety Unit at Eurostat.

sectors characterised by a steady growth in size, today accounting for an estimated 7.2 million hectares of land and more than 180 000 certified organic farms. Four per cent of the total utilised agricultural area (UAA) in the EU is organic, accounting for more than 20 % of the world's organic land.

European Union regulations stipulate that in order for the product to be certified as organic it has to be sown, in the case of crops, or reared, in the case of animals, on land that has been certified as organic for a period of at least two years. 'According to EU regulations, organic land areas include both fully converted and "under conversion" areas,' explained Ms Martinez Palou. 'Italy, Germany and Spain have the largest parts of their arable land converted to the needs of organic farming.'

Organic production is strictly regulated under harmonised EU rules, which changed on 1 January 2009. The rules guarantee the authenticity of organic farming products wherever they are produced and ensure that the labelling of these products is accurate. All foods sold as organic must come from organic operators who are registered with an approved control body and subject to regular inspections.

'The certification and control bodies, which determine whether a producer is entitled to label their products as organic, are created and supervised by the Member States,' said Ms Martinez Palou. 'Three EU regulations from 2007 and 2008 specify the requirements and the procedures to follow, and apply to both crop and livestock farmers.'

More data needed

Eurostat collects and analyses the data compiled by the organic inspection and certification bodies in the EU. 'As of 2005, separate statistics on organic farming can be found on our website,' said Ms De Smedt. 'They include data on organic crop areas, crop production and yields from fully converted

'We started collecting data on organic farming back in 1997,' said Ms De Smedt, who headed the unit until 1 September 2009. 'However, they were not perfect. As of 2000, we noted some improvements in the quality of statistics delivered to us, but even today many EU countries do not produce separate data on organic agriculture. It is automatically considered to be part of conventional agriculture.'

Dynamic sector

However, existing statistics demonstrate that organic agriculture in the European Union is one of the most dynamic



Elisabeth Rohner-Thielen from the Health and Food Safety Unit at Eurostat.

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areas, livestock and production of organic animal products, the number of registered organic operators as well as the number of registered operators processing and importing products issued from organic farming.'

In June 2007, Eurostat released a major report on the status of organic farming in the European Union in 2005. The report focused on the data from two areas which boast the most complete figures so far — the organic land area and the number of registered organic operators (producers, processors and importers).

'Unfortunately, our knowledge in other fields is still incomplete and we are working hard to change this state of affairs,' said Ms Rohner-Thielen. 'Intensive work is going on the harmonisation of data to reach a common European format. New questionnaires prepared by an international task force involving Member States and led by Eurostat are currently being fine-tuned.'

Dr Marleen De Smedt headed the Health and Food Safety Unit at Eurostat in Luxembourg until 1 September 2009. She then moved to Boston in the USA, where she is working as an EU fellow at Harvard University during the academic year 2009/10. Eurostat's Health and Food Safety Unit is currently headed by Anne Clemenceau.

In its work Eurostat relies heavily on the conventional farm structure surveys, where specific questions on organic farming had been inserted. 'However, these surveys only take place every 10 years, with much smaller sample surveys of varying quality taking place in between, every two years,' said Ms Rohner-Thielen. 'We have also been using all the available food producer figures but we need to receive much more data than this.'

Big business

The market for organic products is expanding. Sales of organic products in Europe have been growing steadily and reached approximately EUR 16 billion in 2007. The largest shares of organic products in the EU in 2007 were recorded in Germany, followed by the UK, France and Italy.

'All the available data suggest that in the foreseeable future the European organic market will continue to grow, with all organic producers being obliged to feature the new EU organic logo as required by the new labelling regulations as of 1 July 2010,' said Ms De Smedt. 'We are confident that our ever more comprehensive figures will continue to be useful to policymakers and consumers alike, and help raise the organic industry standards even higher.'

By Lukasz Augustyniak, Eurostat Communication Unit



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Four per cent of the total utilised agricultural area in the EU is organic, accounting for more than 20 % of the world's organic land. Organic production is strictly regulated under harmonised EU rules. The rules guarantee the authenticity of organic farming products, wherever they are produced, and ensure that the labelling of these products is accurate.

Italy — among the European leaders in organic farming

Italy is one of the largest organic food producers in Europe both in terms of surface and the number of organic food operators, i.e. producers and processors of organic produce. The Italian Ministry of Agricultural, Food and Forestry Policies is the body in charge of the organic policies for the country and the owner of organic farming data. *Sigma* met Marta Romeo and Maurizio Esposito to find out more about the methods of data collection in Italy. Ms Romeo manages data in the area of organic farming for the ministry. Mr Esposito is charged with verifying the figures as part of the pre-validation process before they are passed on to Eurostat through the single entry point called the e-DAMIS web form.



Maurizio Esposito and Marta Romeo from the Italian Ministry of Agricultural, Food and Forestry Policies.

and record the type of farming that takes place there, for instance, whether the farmer specialises in production, export or import of organic goods.'

'We aim to have data from the inspection bodies in our office by March each year,' said Ms Romeo. 'By 1 July the data have to be delivered to Eurostat, which means that we only have a few months to verify the data and make sure that they are complete.' According to SINAB's database, in 2007 Italian certification bodies made over 62 000 inspection visits, with over 5 400 samples collected for analysis.

The control bodies use forms in the new format provided by Eurostat. These forms will become obligatory on 1 January 2010. They expand the list of data to be provided by national statisticians. A number of new types of products were added, such as aquaculture and wine making.

Each reporting form is divided into four separate sections. The first section provides information on the registered organic operators. It lists the numbers of operators and their categories (producers, processors and importers, mixed operators). The second section deals with data regarding crops and crop products. It gathers information on the area occupied by each crop (in hectares) and yields of each crop (in tonnes). The next section provides information on livestock (by species) and livestock products. Finally, in the last section, organic farmers give information on the type of their economic activity and the value of their production.

'Our ministry has set up a national information system on organic agriculture called SINAB,' explained Ms Romeo. 'SINAB offers information and technical support to the sector operators in order to develop and promote Italian organic agriculture and it is charged with managing and diffusing information regarding the organic sector in Italy.' SINAB's documentation centre collects, lists and makes available all scientific literature on the topic of organic agriculture.

'At SINAB we receive data collected by the authorised control bodies who audit, at least once a year, companies dealing with organic agriculture,' said Ms Romeo. At the moment there are nine inspection and certification bodies for the whole of country, plus five regional ones dealing with specific provinces. Mr Esposito explained: 'These institutions keep track of the number of hectares cultivated each year



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Organic farming puts an emphasis on environmental protection and animal welfare, and plays an important role in Italy. 'The 1.2 million hectares devoted to organic farming places Italy in the fifth position in the world, after Australia, China, Argentina and the USA,' said Mr Esposito.

Fifty thousand organic operators

Organic farming plays an important role in Italy, as the country has in the past few years developed into the leading producer in Europe both in terms of the number of hectares used for organic agriculture in the country and the number of operators. 'The 1.2 million hectares devoted to organic farming places Italy in the fifth position in the world, after Australia, China, Argentina and the USA,' said Mr Esposito. 'Over 50 000 organic operators are registered in Italy, with a vast majority of them being producers of organic products (over 43 000), followed by the processors (almost 5 000) and both producers and processors (2 000). The regions with the highest presence of organic farms are Sicily and Calabria, both in the south of the country.'

SINAB, whose activities were included for the first time in the Italian national statistical plan in 2008, lists forage, meadows and pastures, and cereals among the main production trends

in organic farming in Italy. 'All together they represent more than 70 % of the total organic surface, followed by olive tree surfaces,' explained Ms Romeo.

Since 1993, the Ministry of Agricultural, Food and Forestry Policies has been the sole owner of agricultural data in the country. Organic data have been collected and published in Italy by SINAB since 1999. 'We have more than 10 years of experience in the collection of organic farming data,' said Ms Romeo. 'However, the quality of our data could be improved, especially through a more exhaustive and regular relationship with the inspection bodies; for instance, we could produce data regarding the types of crops produced in each region of Italy.'

'Italy also intends to use more Eurostat grant funding to improve the quality, reliability and level of spatial representation of its statistics on organic farming,' concluded Mr Esposito.

By Lukasz Augustyniak, Eurostat Communication Unit

Pesticide statistics — facing complete makeover

The risk to humans and the environment caused by the use of pesticides will soon be closely monitored in the EU. It's a decision welcomed by many but the practical implementation will be a challenge for statisticians in this field. They must replace current statistics, mainly pesticide sales data, with a new set of agri-environmental risk indicators.

Pierre Nadin, Statistical Officer in the Farms, Agro-environment and Rural Development Unit at Eurostat.



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‘For decades Eurostat has produced statistics on pesticides that to a large extent are based on sales data for the main types of pesticides. These data have given a rough indication of the aggregated use of pesticides, but they are not particularly useful for monitoring the risk for individuals or the environment in a particular geographical area. For this reason we need new, detailed information on where the pesticides were used, on which crops and what active substances were in use,’ says Pierre Nadin, Statistical Officer in the Farms, Agro-environment and Rural Development Unit at Eurostat.

New legislation creates demand for pesticide-use data

For several years the European Union has had an ambition to reduce the impact of pesticides on human health and environment. But the legislation has mainly concentrated on pesticides’ start and end-of-life phases, for example on the authorisation for placing pesticides on the market and control of their residues in food and foodstuffs.

The situation changed with the adoption, in 2009, of the legal ‘pesticide package’. It includes a framework directive on sustainable use of pesticides that sets out obligations for the Member States to identify crops or areas most at risk from pesticides and to set up buffer zones to separate the usage or storage of pesticides from rivers, lakes and waterways. The pesticide package also contains a regulation on pesticide statistics.

The new legislative framework with a focus on the sustainable use of pesticides is a useful complement to already

existing legislation in this field. However, the practical implementation will be demanding for Mr Nadin and other statisticians in the pesticide domain. They will have to create a new collection of comparable pesticide-use data and develop harmonised indicators that can properly monitor the risk to nature and humans in all EU Member States.

‘In order to develop harmonised indicators that can monitor the risk related to pesticide use, we will have to start by collecting the data that determine the amount of pesticides that end up in the environment as residual pesticides,’ said Mr Nadin.

From national surveys to harmonised risk indicators

The potential impact of pesticides on human health and the environment depends on several factors such as the kind of pesticide used, the targeted crop and the concentration of the active substance. These components of pesticide statistics have to be combined with information on soil types and weather conditions as well as statistics on crop distribution.

Pesticide-use data are not yet collected in the EU or at least not collected in a harmonised or comparable way. But Eurostat and the national statistical institutes have already start-

ed to work on a common methodology for the collection of these statistics which eventually will facilitate the production of harmonised national surveys on pesticide use.

‘Since we need a lot of detailed data about crops, pesticides used, the time of treatment, etc., pesticide-use surveys can be quite complicated and might take several hours to fill in. We probably can’t just send a questionnaire to a farmer but we will need to send someone out who knows about pesticides to help farmers answer the questions,’ said Mr Nadin.

To control the result of the surveys, the amount of pesticides the farmers say they use will be cross-checked against data on pesticide sales to make sure they are consistent. Sales data can also be used to complete time series, since they are

easier and cheaper to get than using data which will only be available every five years. The information on pesticide use in different Member States should be developed into risk indicators that make it possible to compare the risk to humans and the environment as well as the development of this risk over time.

‘Finally, these new statistics will be developed into risk indicators which monitor the proper risk related to pesticide usage and help us to identify areas where the environmental and health risks are particularly high. Hopefully they will provide a useful input for policymaking on environment protection and health-related issues,’ said Mr Nadin.

By Johan Wullt, Eurostat Communication Unit



Mr Nadin and other statisticians in the pesticide domain will create a new collection of comparable pesticide-use data and develop harmonised indicators that can properly monitor the risk to nature and humans in all EU Member States.

Unique cooperation on pesticide statistics in Poland

In Poland a unique cooperation between the Central Statistical Office (GUS) and the Polish Research Institute of Plant Protection (IPP) in the collection and development of pesticide statistics is bearing fruit. The result? Increased quality of data due to the successful use of each counterpart's expertise in statistics and plant protection products.



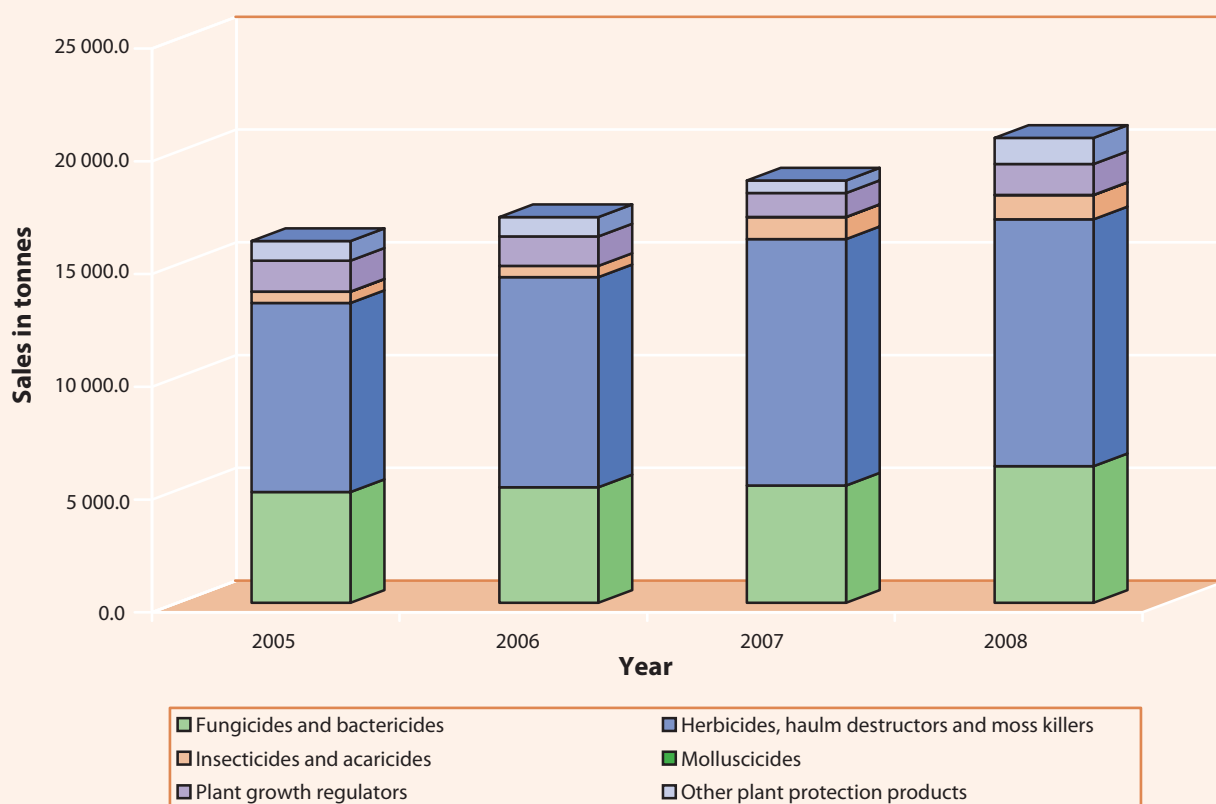
Grażyna Berent-Kowalska, Head of the Energy and Raw Materials Balances Section and responsible for pesticide statistics at GUS, together with Stanisław Stobiecki, Branch Manager at the Institute of Plant Protection.

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Pesticides are used to protect plants against attacks by fungus, insects or weeds. Over the years the use of plant protection products has led to bigger harvests and less risk of losing crops. However, the use of pesticides entails certain risks. Residuals can end up in the environment and affect animals, plants and human beings in an undesirable way.

Reducing the risk related to the use of pesticides is a priority among policymakers on national and EU levels. The aim is to protect people from pesticide-related health risks and to protect the environment. To measure health and environmental risks linked to the use of pesticides, the European Union and Member States are developing risk indicators.

Sales of plant protection products in Poland



Source: GUS

'Appropriate indicators are needed to monitor risks related to the use of pesticides and the calculation of such indicators is possible only with high-quality, detailed and up-to-date data on sales and use of pesticides,' said Stanisław Stobiecki, Branch Manager at the Institute of Plant Protection.

'Therefore, the Polish Statistical Office and the Ministry of Agriculture and Rural Development in cooperation with IPP, decided that an overhaul of pesticide statistics was necessary at the end of the 1990s,' he continued.

'The move was also supported by three new EU laws concerning the placing on the market of pesticides, sustainable plant protection and one on pesticide statistics,' added Grażyna Berent-Kowalska, Head of the Energy and Raw Materials Balances Section and responsible for pesticide statistics at GUS.

'To increase the quality of pesticide data, prepare for the creation of risk indicators and to involve experts in the analysis, it was decided that GUS and IPP should work closely together,' she continued.

All products and 20 crops covered

The two institutes worked closely together to revamp the pesticide data collection. The main difference between old and new plant protection product sales data is that the Statistical Office now collects data for all 813 authorised plant protection products sold by producers and importers. Until 2004 a reduced set of plant protection products was covered by statistical sales surveys. The basic data are collected, controlled and verified by GUS and then aggregated and analysed by the IPP.

'We collect in kilos or litres the amount of pesticides sold by reporting units and the Institute of Plant Protection calculates the active substance in each of these products,' said Ms Berent-Kowalska.

'To prepare proper, high-quality data on pesticides, specialists in the subject matter are needed and, as the Institute of Plant Protection is the national research institute for plant protection matters, it is natural that we do the analysis,' said Mr Stobiecki.

Data on sales of pesticides are made available by the Central Statistical Office on an annual basis. Statistics are presented according to Eurostat classification codes in commodity mass and in active substances by major groups, categories of product, and chemical classes.

On the user side, 20 different crops are surveyed in five-year periods. Around 400 inspectors from the Plant Health and Seed Inspectorate are active in collecting the data. During direct visits to farms they ask questions about the type of crop, the crop area, treatment periods, the names and doses of the pesticide, the treated area and the reasons for treatment. The inspectors collect data for all spraying on the land or crop during a 12-month period. A typical period starts in August with the harvest and ends in September the following year with the elimination of the weeds and crop remnants before sowing the new crop.

In this area GUS is responsible for the sampling of the 2 000 to 4 000 agricultural holdings in which usage of pesticides is surveyed. The IPP checks the quality of collected data and aggregates, as well as makes, the final analysis.

Ms Berent-Kowalska said that the main users are the Ministry of Agriculture and Rural Development and the Ministry of Environment, who use both sales and use data to monitor agricultural and environmental issues as well as to help recognise the relations between agricultural activities and the environment.

Preparing risk indicators

In 2003 the EU funded a research programme to provide a harmonised European approach for indicators of the over-

all risk of pesticides. The project delivered a set of indicators which assess pesticide impacts on agri-ecosystems and human health and these indicators should now be adapted to local conditions and national databases should be created.

Mr Stobiecki said the institute had just started the work to elaborate risk indicators for the use of pesticides in Poland. The collected data will form the basis for the indicators, which should see light in 2011. These indicators will be used to define policy targets and, at a later stage, to assess the success of pesticide policy.

'It is quite complicated to design proper indicators and there also needs to be a harmonised approach on EU level in order to enable comparisons between Member States,' said Mr Stobiecki.

Apart from developing the risk indicators the two institutes are working on improving the quality of the data.

'One key factor of our cooperation is that we meet regularly together with the Main Inspectorate of Plant Health and Seed Inspection and try and improve some elements of the preparation, collection and analysis of the data,' said Ms Berent-Kowalska.

By Annika Östergren Pofantis, Eurostat Communication Unit



In Poland work has started to elaborate risk indicators for the use of pesticides, which should see light in 2011. These indicators will be used to define policy targets and, at a later stage, to assess the success of pesticide policy in Poland. Pictured is a hay harvest in the Pieniny Mountains in southern Poland.

Land and ecosystem accounts — a useful tool when developing environmental policies

The European Environment Agency's (EEA) job is to improve policymakers' and citizens' knowledge about the environment and to nudge policies into a more sustainable direction. It is a difficult task. But the EEA is now creating a framework — a set of land and ecosystem accounts — that demonstrates the interdependence of the economy and the environment.

'The relationship between the global economy and the environment is complex but very important. By studying past experiences, this relationship becomes apparent. We want to use this knowledge to help decision-makers with their decisions and hopefully improve the environment in the future,' said Jock Martin, Head of Programme, 'Integrated environmental assessment'.

The EEA, an independent agency of the EU, is based in Copenhagen, Denmark. Its main task is to provide information on how to improve the environment, integrate environmental considerations into economic policies and move towards sustainability. Its main users include the EU Member States and EU institutions, for example the European Commission Environment DG as well as other Commission DGs, with policies related to the environment.

'Our job is to make sure that our information is being used by people responsible for environmental policy and related areas such as agriculture, transport and energy. We don't provide policymakers with ready-made answers. We rather give them the background information on which they can base their decisions,' said Mr Martin.

Explaining the interaction between environment and society

Besides a continuous production of both thematic and cross-cutting analysis at both regional and national levels, the EEA produces integrated European environmental assessments every five years. These assessments help frame, support and evaluate the progress of a wide range of policies such as the objectives and priorities of the sixth environment action programme of the European Community.

Since work started at the EEA in 1994, these assessments have become increasingly complex. Society requires more detailed and integrated information about the environment in areas such as climate change, biodiversity, use of natural resources and ecosystem, and human health. More and more decision-makers want to see the changes in a global context because a globalised economy makes it difficult to isolate a region and to analyse its impact on the environment separately.

For example, 10 years ago, the EEA's assessments could be based on statistics on crops produced and consumed in Europe. Nowadays, globalisation has led to increased import of agricultural products from countries outside Europe. The EEA now provides a global picture, including the impact of imported products on the environment outside the EU.

'We are importing an increasing amount of the food we are eating. Therefore, we have recently developed a method, also including imported food, to benchmark the true impact of our food consumption on land in and outside Europe. What needs to be clarified in the final context is the amount of carbon, water and land that has been used in the production of the food we consume. We know they are ambitious objectives, but ones we are striving to achieve in the next couple of years,' said Mr Martin.

To meet the demand for more integrated global assessments of the environmental situation, the EEA relies on three different sources of information: statistics from Eurostat and other national statistical institutes; in-situ monitoring i.e. data from portable analytical instruments measuring, for example, water quality in a river or air quality in a city; satellite images — an increasingly popular source. Satellite images have increased the speed at which results in, for example, the seasonal water accounts can be presented to policymakers.



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'The global perspective has brought about an increased use of satellite pictures. We now need to improve the link between statistics, satellite pictures and in-situ monitoring and also to strengthen our spatial analysis. Take fertilisers as an example. To measure the impact of fertilisers on the environment we need data on local use, geographical data to find out the location of fresh water sources and, finally, in-situ monitoring to see if the use of fertilisers has had an impact on the fresh water in the area,' said Mr Martin.

Land and ecosystem accounts

The EEA has improved its analytical tools substantially over the years, but there are more challenges waiting ahead. The EEA is currently developing land and ecosystem accounts which describe the links between the vital commodities, goods and services that are provided by the ecosystem as well as the underlying processes that generate them.

Globalisation has led to increased imports of agricultural products from countries outside Europe. Therefore, the EEA has recently developed a method, which includes imported food, to benchmark the true impact of our food consumption on land in and outside Europe. 'What needs to be clarified in the final context is the amount of carbon, water and land that have been used in the production of the food we consume,' said Mr Martin.

In these new accounts all EEA's sources of physical information such as statistics, in-situ monitoring and satellite images are brought together and linked to economic data. This work is being undertaken in close cooperation with Eurostat in the context of the European strategy on environmental accounting and with the United Nations in the context of the revision of the system for environmental and economic accounting.

These accounts will quantify the change in supply of goods and services provided by the ecosystem from one period to another. The change in supply, being either an improvement or degradation, is valued by the investments needed to restore the ecosystem to a stated target. To put a price on the change in supply is important if we want that politicians are able to include fully environmental considerations into their economic policies.

'We hope that the first generation of accounts will be ready in 2011 as a support to when the EU politicians start discussing the next long-term budget and dividing money between different policy areas. At that point we want to show them the true value of the goods and services we get from the natural environment, for supporting Europe's overall economic and societal welfare,' said Mr Martin.

By Johan Wullt, Eurostat Communication Unit

Ecosystem accounts — a brief explanation

- Simplified ecosystem accounts can be computed based on the physical measurement of ecosystem degradation (1) from over-consumption. This degradation is then valued by the investments necessary to restore ecosystem potential (2). The result is domestic consumption of ecosystem capital (3), to which can be added the consumption of sub-soil assets, to give the consumption of natural capital (4).
- National income has to be calculated net of the consumption of natural capital in the same way as consumption of fixed capital is subtracted from GDP in the national accounts; the result is the adjusted disposable national income.

1. Physical measurement of ecosystem degradation is achieved via a set of six indicators of ecosystem quality and health: landscape index (e.g. intensity of land use, landscape fragmentation, integrity of high-nature value areas); biodiversity index (species distribution, richness, specialism); bio-productivity index (biomass, carbon); water index (available resource, energy, soil humidity); dependency index (chemicals, irrigation, subsidies); and health index (human, wildlife, vegetation).

2. Costs necessary to restore ecosystems are the additional expenditures needed to maintain the ecosystem. For each ecosystem type, mean unitary costs can be computed from statistics on actual expenditures for environmental protection and management.

3. Domestic consumption of ecosystem capital is calculated by multiplying degradation by corresponding mean unitary costs. It covers both depletion of economic resources and deterioration of ecosystem health.

4. Consumption of natural capital is the sum of domestic consumption of ecosystem capital and the depletion of non-renewable assets.

A voluntary approach to agricultural conservation in the United States

Farmers in the United States are tasked with feeding a growing population — both at home and across the globe — with ever-changing needs and tastes. But US farmers are increasingly asked to accomplish this in an environmentally sustainable way. Amid growing public demand for a more sustainable agricultural system, Federal agri-environmental programmes have expanded to help farmers care for the natural resources that sustain life and agricultural production, as Michael S. Hand from the US Department of Agriculture told *Sigma*.

The necessity of public involvement in agricultural conservation became acutely clear during the Dust Bowl era of the 1930s. During this time, production on marginal lands in the American Great Plains region coupled with severe drought depleted soil nutrients and put thousands of farms out of business. The response from the government was to encourage farmers to take marginal lands out of production and adopt practices to preserve nutrients and reduce soil erosion.

Today, US farmers can participate in a broad portfolio of voluntary conservation programmes designed to reduce the negative environmental impact of farming. By 2012, annual funding for federal conservation programmes will reach nearly USD 6 billion, spread across land retirement, working lands, and farmland preservation programmes. The portfolio of programmes provides farmers with flexibility to address a variety of environmental problems.

Sixty per cent of federal agricultural conservation expenditure

The two largest programmes are the Conservation Reserve Program (CRP) and the Environmental Quality Incentives Program (EQIP); these two programmes account for about 60 % of federal agricultural conservation expenditure. CRP and EQIP are complementary conservation programmes; CRP retires the most environmentally sensitive land from production, while EQIP is designed to reduce the negative environmental impact from farmland still in production.

CRP is the primary land-retirement programme for agricultural land. Federal law caps the total acreage allowed in CRP; about 31 million acres of farmland are currently enrolled in the programme — land once used to grow crops, but now planted with native grasses and trees, legumes and cover crops to reduce soil erosion and replace soil nutrients. En-

vironmentally sensitive cropland can also be enrolled in the CRP to provide wildlife habitat and to protect streams and rivers from erosion and nutrient run-off.

Parcels of land are selected for CRP enrolment based on the environmental benefits they can provide and the cost of the payments to the farmer. Payments are based on the per acre rental rates farmers could receive for their land, although farmers can accept a lower payment rate to increase the chance of having their land enrolled. This mechanism provides an incentive for farmers to offer land that can cost-effectively provide the greatest environmental benefits.

In contrast to CRP, conservation practices in EQIP target agricultural land that is currently in production. This working-lands programme provides incentive payments for farmers who adopt soil-conserving practices on crop land or install structures that help improve air and water quality, protect soil productivity, and conserve water. Much of EQIP's funding supports conservation activities on livestock operations, including incentives for sustainable management of animal waste.

Other programmes, while smaller, fit particular conservation needs that may not be addressed in the larger programmes. These include programmes to preserve wetlands and grasslands, provide critical wildlife habitat, keep productive land in agricultural production, and rehabilitate land damaged by natural disasters. For example, the conservation stewardship program (CSP) is a working-lands programme that pays farmers to maintain existing conservation activities and address additional environmental problems.

Consistent with the voluntary approach of US conservation policy, an emerging trend is to assist farmers willing to participate in environmental services markets. Recent legislation requires the government to develop guidelines for measuring environmental services provided by conservation activities, with a special emphasis on how agricultural producers can participate in carbon markets.

Positive impact of conservation programmes

Are conservation programmes in the United States improving the environmental performance of agriculture? A wide range of research and evidence suggests that conservation programmes have helped mitigate environmental problems stemming from agricultural production. Recent research has relied on surveys of farm operations, area-based land surveys, and soil surveys to connect conservation practices to conservation outcomes. These survey data, often analysed with biophysical and econometric models, allow researchers to estimate how different land uses and conservation practices impact soil erosion, nutrient run-off, and greenhouse gas emissions. Further, simulations and model-based estimates can assist in predicting how policy changes will affect conservation practice adoption and, ultimately, environmental impacts.

Additional data resources may be necessary if emerging approaches to agricultural conservation are to take root on a large scale. Previous research has used survey data to determine that performance-based conservation payments — rather than payments for the adoption of particular practices — can be effective on a national scale in delivering environmental benefits. But environmental degradation from agriculture tends to be difficult to trace to a particular farm or point source, and environmental performance can be costly to monitor or assess for particular farms. For example, market-based conservation schemes must provide reasonable assurance that participants are creating an environmental good or service that can be traded. This may require significant new monitoring and data about individual farms participating in a market-based programme.

Agricultural conservation in the United States has undergone a vast evolution since its early days during the Great Depression. And federal programmes will continue to evolve with the needs of more than 2 million US farmers. These farmers



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In the United States, smaller programmes fit particular conservation needs that may not be addressed in the larger programmes. These include programmes to preserve wetlands and grasslands, provide critical wildlife habitat, keep productive land in agricultural production, and rehabilitate land damaged by natural disasters. Pictured is switchgrass, native to North America, which provides habitat for ground-nesting birds and forage for beef cattle.

are responsible for producing food, fibre and fuel for millions of consumers around the world, and increasingly use federal conservation programmes to improve the environmental sustainability of US agriculture.



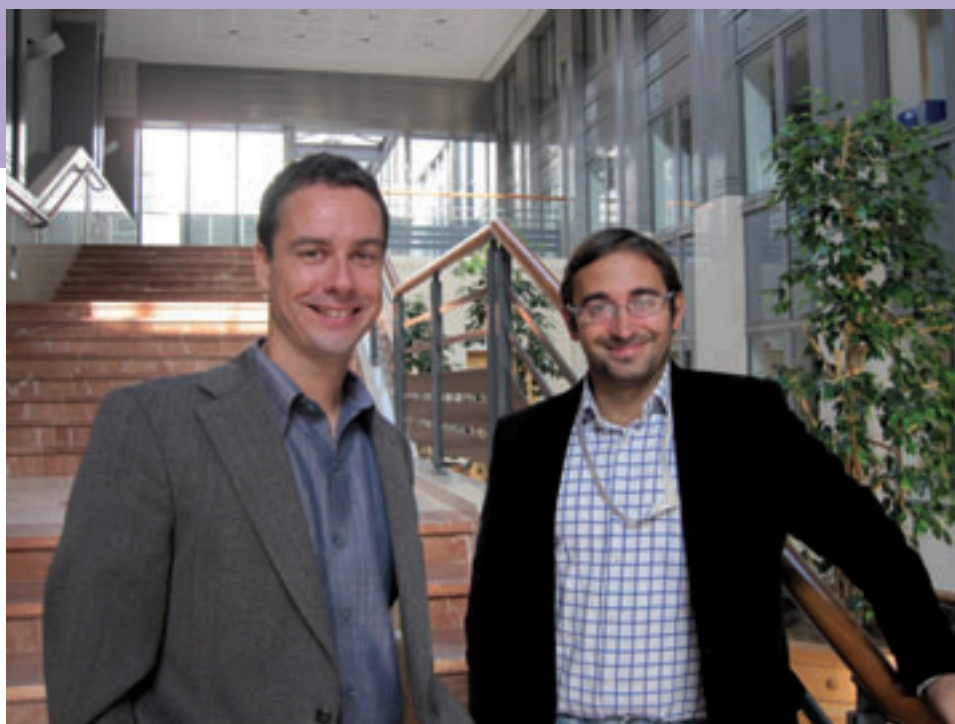
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*By Michael S. Hand, Economist
in the US Department of Agriculture,
Economic Research Service*

US farmers can participate in a broad portfolio of voluntary conservation programmes designed to reduce the negative environmental impact of farming. By 2012, annual funding for federal conservation programmes will reach nearly USD 6 billion spread across land retirement, working lands, and farmland preservation programmes. Pictured is a farm by Mount Whitney in California, United States.

Reforming the EU's fisheries policy: the importance of high-quality data and scientific advice

Sustainable development of fisheries resources lies at the heart of the European Union's common fisheries policy. Managing the diverse marine resources that the sector depends on is a complex task. In this respect, research efforts and high-quality scientific data can help ensure the continued productivity of the sector and provide crucial information necessary to properly manage living marine resources.



Erik Lindebo and Angel Calvo Santos, economic analysts at the European Commission's Directorate-General for Maritime Affairs and Fisheries.

and in April 2009 a fresh public consultation on a new reform was initiated.

Data for supporting scientific advice

'One fundamental principle of good governance is to base legislation on the best available scientific knowledge. Therefore, the EU's fisheries policy is dependent on research-based recommendations. This requires mechanisms

in place for producing recommendations and high-quality data to support the whole chain of scientific advice,' said Angel Calvo Santos, economic analyst at the European Commission's Directorate-General for Maritime Affairs and Fisheries.

The main instrument to ensure that biological and economic fisheries statistics are available is a new framework regulation, in force from 2009, on the collection of fisheries data. This law identifies the different types of data which must be collected according to annual work programmes in each Member State.

The collected information — for example data on catches and landings, fish stocks, ecosystems, environment and socioeconomic aspects — enable the European Commission to evaluate the activities of each country's fishing fleet.

Fish are a renewable natural resource. Fish swim freely in the oceans, across borders, which means that every fisherman is influenced by the actions of others. Therefore, in the 1970s, the Member States agreed to develop a common fisheries policy to manage fisheries and aquaculture in the European Union. The policy was born in 1983.

Twenty years later, in 2002, the Union's fisheries policy was reformed and today aims at ensuring the sustainable development of fishing activities from an environmental, economic and social point of view. The goal is also to improve the basis of the decision-making process through sound and transparent scientific advice and to increase the participation of stakeholders. Coherence with other EU policies such as environmental and development policies is also an important element, as are accountability and effectiveness. In spite of this progress the policy is still falling short of its targets



According to Mr Lindebo, the new framework regulation, in force from 2009, on the collection of fisheries data is a big step forward. 'Data are now available for all relevant policy purposes, including analysis for scientific advice, to support the public debate and for scientific analysis in general,' he said.

servation issues such as long-term management plans, quotas and technical measures. After the introduction of an impact assessment requirement in the legislation, scientific advice is now being sought for a wider range of proposals.

Biological information on landings and catches, which also provide information on which fish have been discarded, are collected based on observer schemes onboard boats. These data are complemented with information from research vessels which collect statistics on the abundance and biology of fish stocks. Other sources provide statistics on prices, costs and employment in the sector as well as data from sales reports and information on the activities of fishing fleets.

'The new regulation is a big step forward. Data are now available for all relevant policy purposes, including analysis for scientific advice, to support the public debate and for scientific analysis in general,' said Erik Lindebo, economic analyst at the Maritime Affairs and Fisheries DG.

'The new legislation also makes a better linkage to other data sources. Data from vessel monitoring systems will, for instance, be available, without vessel ID information, for scientists. Furthermore, fishing boats are obliged to take observers onboard if requested, except in the case of small-scale fisheries, to collect data on discarded fish,' continued Mr Lindebo.

The new regulation also has an instrument to finance studies in support of scientific data collection and advice.

Architecture of the research-based advice

'The new regulation states that the common fisheries policy should be guided by a principle of good governance which is "a decision-making process based on sound scientific advice which delivers timely results"', said Mr Calvo Santos.

Mr Calvo Santos explained that in the past, scientific advice was sought before any proposals were made regarding con-

Scientific advice is delivered by the Scientific, Technical and Economical Committee for Fisheries (STECF). The committee consists of biologists and economists who are appointed by the European Commission. It meets three times a year to finalise advice, based on previous work already carried out in a multitude of working groups where scientists compile and analyse data.

For many issues the committee does not prepare the analysis itself but relies on research and advice developed by other bodies. The most important contribution comes from the International Council for the Exploration of the Sea (ICES), which is an intergovernmental organisation for the cooperation in marine research dating back more than 100 years and which has been the main provider of independent scientific advice since the common fisheries policy started (see also the article on page 41). The information coming from ICES is reviewed by STECF and ultimately ends up as the committee's own advice.

ICES only deals with the natural sciences and all analysis concerning economic issues is, therefore, done by STECF alone. Historically it has only been the European Commission which could make calls for data collected through the framework legislation. Under the new framework regulation, a wider range of end-users can now request data directly.

Challenges

'STECF's advice still needs further development to address a range of challenges and shortcomings,' said Mr Lindebo.

'So far, advice has had a strong focus on annual catch options evaluated from a biological perspective. Economic and social research has been developed recently, especially as components in research projects. However, economic and social issues are still not fully taken into consideration, partly



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Advice on fisheries had a strong focus on annual catch options evaluated from a biological perspective. Wider aspects of fisheries, such as climate change, are addressed in research projects but are incorporated in the advice only to a very limited degree. 'The fisheries and aquaculture research community within Europe needs to be strengthened to be able to address the new challenges facing European fisheries. New frontiers should be explored and new methods and tools developed to ensure the future of sustainable fisheries and aquaculture within a healthy ecosystem,' said Mr Calvo Santos.

because data or models for inclusion of these issues are insufficient. This has made it difficult to implement requirements for impact assessments covering environmental, economic and social aspects,' he continued.

Mr Lindebo explained that wider aspects of fisheries, as required by an ecosystem approach and inclusion of environmental changes such as climate change, are addressed in research projects but are only to a very limited degree incorporated in the advice. There is furthermore still a lack of advice on fishing options for mixed fisheries. Consequently quotas are set on a single stock basis with the result that the fishing fleet in mixed fisheries runs out of quota of different

species at a different rate, leading to discards of those species for which quotas have been exhausted.

'The fisheries and aquaculture research community within Europe needs to be strengthened to be able to address the new challenges facing European fisheries. New frontiers should be explored and new methods and tools developed to ensure the future of sustainable fisheries and aquaculture within a healthy ecosystem. High-quality statistics are a necessary condition to meet all the challenges and achieve required goals,' concluded Mr Calvo Santos.

By Annika Östergen Pofantis and Lukasz Augustyniak, Eurostat Communication Unit

Developing fishery statistics at Eurostat

Fish know no borders and the activities of one fishing fleet have a direct impact on fishing opportunities of other fleets, on the future of fish stocks and on the marine ecosystem. Therefore, the European Union has established a common fishery policy. Today too many vessels chase too few fish, which has resulted in the depletion of fish stocks, smaller catches and lower income for fishermen. To tackle this no-win situation the European Union has reformed its fishery policy and recommended cuts in fishing quotas and fleets. To support the revamp and the evaluation of old and new policies, data are essential.



Eurostat's fishery statistics team: Matthew Elliot, Annabelle Jansen, Franco Zampogna, Steffie Bos and Gita Vergina, the Head of Eurostat's Agriculture and Fisheries Unit.

framework. Our data series also have a long history. The first fisheries yearbook was published already in 1975,' said Gita Vergina, Head of Eurostat's Agriculture and Fisheries Unit.

Eurostat's fisheries statistics work programme is first and foremost designed to support the EU's Directorate-General for Maritime Affairs and Fisheries to analyse different aspects of the EU's common fisheries policy (see the article on page 33).

Eurostat's fisheries collection, which is one of the largest and most comprehensive databases of fisheries statistics in the world, is also used to respond to requests from other EU institutions — primarily the European Parliament and the Council — as well as national authorities, international fisheries organisations and the public at large.

Comprehensive data with a long history

'Eurostat fisheries and aquaculture statistics are collected in a well coordinated way, with a coherent and tight legal

Eurostat's data collection is divided into four groups: catches, landings, aquaculture and fleet statistics. Annual catch statistics are collected by species and by area in the Atlantic Ocean, the Mediterranean and the Indian Ocean, which are the most important fishing areas for the EU-27.

Data on landings include the quantity and average price of the fish or fish products at their ports. These data are broken down by species and by flag of the fishing boat.

The aquaculture data include information on, the production and value of aquacultures, the input on hatcheries, nurseries and capture-based aquaculture — which is when you catch fish and 'fatten' them in captivity — as well as the structure of the sector.

Together with the Commission Maritime Affairs and Fisheries DG, Eurostat also keeps data on the number, size, tonnage, power and age of the EU fishing vessels.



Eurostat's fisheries collection is one of the largest and most comprehensive databases of fishery statistics in the world. It contains data on catches, landings, aquaculture and fleets.

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The bible of fishery statistics

Standard concepts, definitions, classifications and procedures for the collection of fishery statistics are developed in the Coordinating Working Party on Fishery Statistics. This international body, which is coordinated by the Food and Agriculture Organisation (FAO), has 15 international organisations including Eurostat, as members.

'The coordinating working party for fish is a central reference point for international organisations working in the fisheries statistics world. As fish are international resources, statistical coordination between different parts of the world is unavoidable,' said Franco Zampogna, Head of the Fishery Section at Eurostat.

'Eurostat is a key contributor, especially for questions dealing with the North Atlantic, the Baltic and the Mediterranean Seas, which are among the most productive fishing areas in the world. Eurostat also plays a leading role when developing standards and definitions in the aquaculture area, among others, in giving a major input to the revision

of the FAO's handbook of fishery statistics, which could be considered as the bible of the fishery statistics,' he continued.

New integrated approach

Initially the EU's fisheries policy focused on the management of marine resources and the structure of the fishing industry. Today, socioeconomic aspects are integrated and the aim is to develop sustainable fisheries by analysing the economic performance of the EU fleet.

In 2007, the European Commission launched an integrated maritime policy, which addresses the development of EU sea-related activities. Previously the activities were dealt with sector by sector — transport and energy, tourism, environment, industry and shipyards, employment, regional aspects, etc. The new policy recognises that all matters relating to Europe's oceans and seas are interlinked and that the waters surrounding the European continent are a vital natural resource and a main driver of Europe's growth, jobs, competitiveness and prosperity.



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Eurostat's contribution to an integrated maritime policy is to provide statistical data related to each sub-domain and data for long-term analysis. Additionally, Eurostat plans to collect data on supply balance sheets for fishery products, employment statistics and to produce sustainable fisheries indicators,' said Franco Zampogna.

Eurostat's contribution to an integrated maritime policy focuses on providing statistical data related to each sub-domain and data for long-term analysis,' said Mr Zampogna.

'Additionally, Eurostat plans to collect data on supply balance sheets for fishery products, employment statistics and to produce sustainable fisheries indicators,' he continued.

Today one important sustainable fishery indicator produced in cooperation with the International Council for the Exploration of the Sea (ICES) is the percentage of catches taken from stocks outside safe biological limits. Other indicators related to the fishing fleet are being discussed with stakeholders.

Modernising the infrastructure

Eurostat's fisheries team is also working hard to modernise the infrastructure of its database and to improve its data's user friendliness.

'The reform of the EU's fisheries policy has led to new data needs as well as requests for quality improvements, in particular regarding the methodology. To become more efficient we aim to make better use of modern IT tools for data transmission and processing, as well as making more efficient use of resources,' said Matthew Elliot, Statistical Officer in charge of data management and coordination for fishery statistics at Eurostat.

The European Union's negotiations with Iceland on its future EU membership are another point on the agenda. When the Icelandic foreign minister, Ossur Skarphéðinsson, handed in the application in June 2009, he stated that fishery would be particularly important for Iceland in the accession negotiations that lie ahead.

'However, we do not see any major issues for fisheries statistics. Standards are good and we have worked together for a long time in the framework of the European Economic Area,' said Mr Zampogna.

*By Annika Östergren Pofantis,
Eurostat Communication Unit*

Compiling statistical data for Europe's largest fishing nation

Spain is Europe's leading fishing nation. Its fishing fleet employs over 50 000 people and has over 12 000 vessels at its disposal. Miguel Ángel Cordón, who works in the statistical branch of the Spanish Ministry of the Environment and Rural and Marine Affairs, is responsible for fishery statistics. *Sigma* met him to discuss the way his team goes about collecting Spanish fishery data.



Miguel Ángel Cordón is responsible for fishery statistics in the statistical branch of the Spanish Ministry of the Environment and Rural and Marine Affairs.

we get a good idea about what is going on.'

The Spanish fleet is deployed all over the globe. The fishing vessels are active in the Atlantic, Pacific and Indian Oceans. The Spanish also fish in the Mediterranean and in French, British, Irish and Portuguese waters.

Mr Cordón explained that in Spain fishery data are collected by two institutions which work closely together — the Spanish National Statistics Institute (INE) and the Ministry of the Environment and Rural and Marine Affairs. 'The statistical branch of the ministry employs around 20 people,' said Mr Cordón. 'We are also advised and helped out by an external firm providing us with more capacity and technical expertise.'

'We collect fisheries data in two areas: sea fishing and aquaculture,' continued Mr Cordón. 'However, the methods of data collection in those two fields differ.'

Mr Cordón went on: 'We collect the sea fishing figures from surveys carried out by our ministry and by INE and from administrative sources. The administrative sources, in turn, can be split into data registers belonging to the ministry, providing us with such figures as the size of the fishing fleet, and other sources, such as landing declarations, sales notes, catch diaries kept by the captains. As you can see,

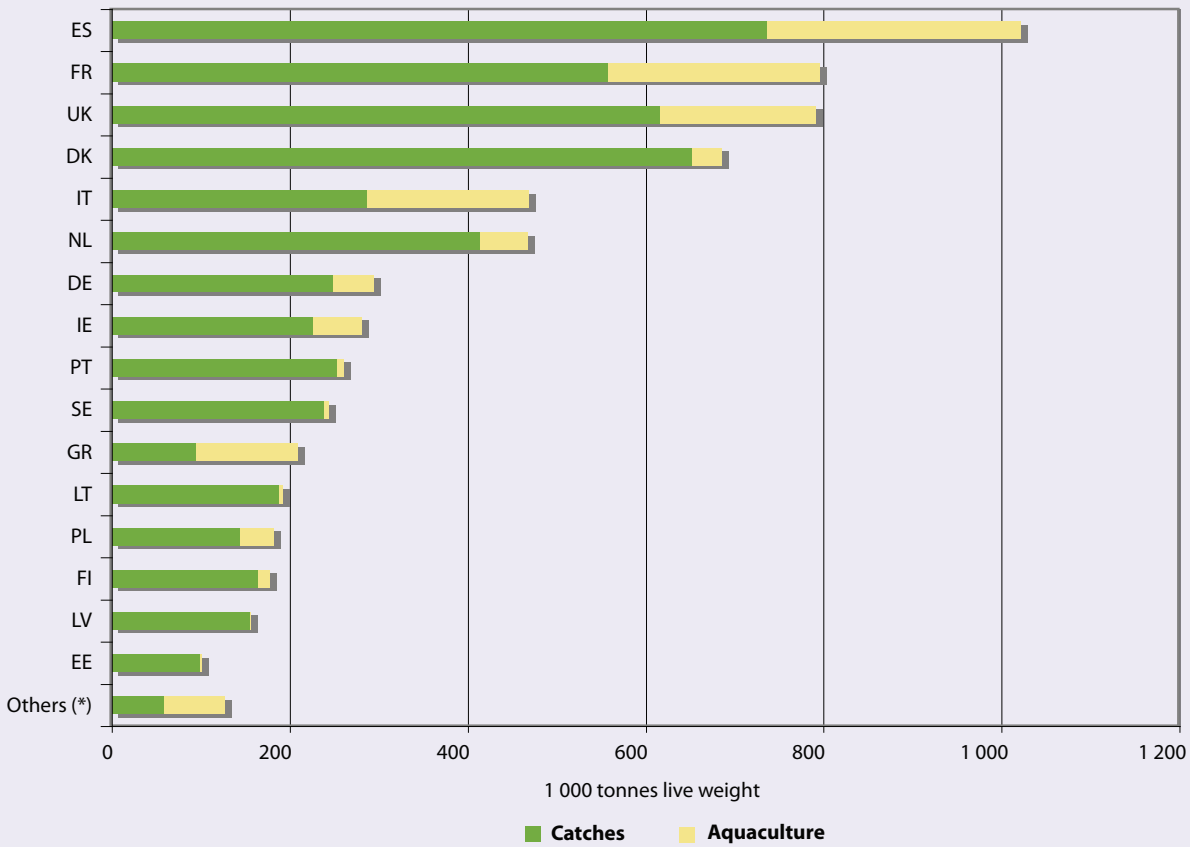
'In addition, agreements signed by the EU allow fishing in the waters of third-party countries, and some of our fleet contractors also form joint ventures with a number of South American and African countries, which means that we can fish in their territorial waters, because the boats are no longer Spanish,' explained Mr Cordón.

Aquaculture data dependent on surveys

The aquaculture data relate to the marine and continental production. 'In Spain, the marine production by far exceeds the continental one,' explained Mr Cordón.

In the field of aquaculture, the statistics team of Mr Cordón has not got access to data registers but relies solely on surveys. 'In this area we carry out two types of surveys,' explained Mr Cordón. 'The economic surveys give us an idea of the value of the aquaculture installations, the enterprise surveys let us find out more about the type of activities

EU-27 fishery production in 2007



(*) Others: CZ, BE, HU, RO, BG, MT, CY, SK, AT, SI, LU.

Source: Eurostat

carried out by aquaculture firms and the type of products they specialise in.'

Mr Cordon explained that the largest aquaculture region in Spain is Galicia in the north-west of the country. More than 3 000 registered aquaculture enterprises are the leading producers of molluscs in Spain. By contrast, the southern and eastern regions of the country, such as Andalucía, Murcia and Cataluña, specialise in the aquaculture production of fish, such as sea bream and turbot.

Complex control systems

Asked about ways of controlling the quality of data, Mr Cordon explained that the control system is very complex. 'On the one hand, data coming to us from administrative sources had already been verified by the collecting body, so we do not need to run any quality checks on them,' said Mr Cordon. 'As far as the survey data are concerned we are forced to rely on various sampling procedures. For the ship-

ping fleet we conduct about 900 sample vessel controls per year. We also visit hundreds of companies involved in aquaculture.'

Each year, by the end of September, the Statistical Division at the Ministry of the Environment and Rural and Marine Affairs receives economic fishery data for the previous year. The data are verified by the statistical team and published in March of the next year. The catch and aquaculture statistics are made available the year following the reference year.

'When verified, we send the data to two directorates-general of the Commission: the Directorate-General for Maritime Affairs and Fisheries and Eurostat,' concluded Mr Cordon. 'However, both directorates-general have different methodologies and deadlines for data delivery — which can sometimes put an additional burden on our busy team.'

By Lukasz Augustyniak, Eurostat Communication Unit

The International Council for the Exploration of the Sea — setting common standards

The International Council for the Exploration of the Sea (ICES) is the oldest intergovernmental organisation in the world concerned with marine and fisheries science. One of its key tasks is to provide policymakers with information and analysis related to the marine environment and fisheries. *Sigma* spoke to Hans Lassen, Head of the Advisory Programme at ICES, about the organisation's work related to sustainable fisheries.



Hans Lassen, Head of the Advisory Programme at the International Council for the Exploration of the Sea (ICES).

ICES has 20 member countries which include all coastal states bordering the North Atlantic and Baltic Sea. The organisation has a network of more than 1 600 scientists from 200 research institutes. These scientists monitor the status of marine ecosystems, including the abundance of fish and through their research they improve our understanding of how the ecosystem functions.

Joint database with Eurostat

Information from the laboratories is supplemented with data from Eurostat and from national statistical institutes in the countries outside of the European Union. In fact, ICES and Eurostat have a joint database with all catches, production in fish farms and sales of fish from the North Atlantic.

'We cooperate to establish common standards and reporting systems. We also disseminate together. Our partnership with Eurostat is the basis of our work, but as we need an overview of everything linked to fish, fisheries and the marine environment in the North Atlantic, we complement it with information from other countries fishing there,' said Mr Lassen.

The ICES system is based on standard concepts, definitions, classification and methodologies agreed by the Food and Agriculture Organisation of the United Nations which make the harmonisation of EU and the crucial non-EU data easier — but not without challenges.

'As with any international system it is difficult to maintain common standards and to have reliable data,' said Mr Lassen.

ICES coordinates and promotes marine research on oceanography, the marine environment and its ecosystem, as well as on living marine resources in the North Atlantic and Baltic Sea. ICES specifically provides international advice on the status of fish stocks in the North-East Atlantic, which is roughly the area south of the southern tip of Greenland to just north of Morocco. This area constitutes the biggest chunk of EU waters and around 75 % of all fish caught by EU fleets are fished here.

In total 9.5 million to 11 million tonnes of fish are caught in the North Atlantic each year. Fishing boats from EU countries fish 4 million to 5 million tonnes, from Iceland 1.5 million, Norway 2.3 million, Russia 0.9 million and the Faroe Islands 0.6 million tonnes.

'To study the impact of fishing on fish stocks in the North Atlantic and to see the real pressure, we need data not only from EU countries, but also from other fishing nations active in the area,' said Mr Lassen.

International Council for the Exploration of the Sea

The International Council for the Exploration of the Sea (ICES) coordinates and promotes marine research on oceanography, the marine environment, the marine ecosystem, and on living marine resources in the North Atlantic. ICES has 20 member countries which include all coastal states bordering the North Atlantic and the Baltic Sea as well as affiliate members in the Mediterranean Sea and southern hemisphere.

ICES is a network of more than 1 600 scientists from 200 institutes linked by an intergovernmental agreement to add value to national research efforts. Scientists working through ICES gather information about the marine ecosystem.

Besides filling gaps in existing knowledge, this information is developed into unbiased, non-political advice. The member countries that fund and support ICES use this advice to help them manage the North Atlantic Ocean and adjacent seas.

ICES is based in Copenhagen, Denmark. It has 47 staff, who provide the ICES community with scientific, data handling, administrative and secretarial support.

For further information: www.ices.dk

Advice to the European Commission

One of ICES' most important roles is to give advice and status reports to the European Commission's Directorate-General for Maritime Affairs and Fisheries on fish stocks and the marine environment. The organisation provides a similar service to the North-East Atlantic Fisheries Commission and its member countries. ICES also works together with the European Environment Agency and the European Commission's Environment DG and Maritime Affairs and Fisheries DG to develop indicators. The indicators will help measure how well the European Union manages to reach its goal to achieve good environmental status of the EU's marine waters by 2021. The indicators will also be used to assess the state of the marine environment, to establish clear targets and to monitor programmes.

Today the indicator on the state of fish stocks is widely used and aims to give policymakers an input on how well stocks are maintained at levels which produce a maximum sustain-

able yield or to restore depleted stocks to those levels by 2015.

'Apart from looking at the actual number of fish and other animals in the water, we also study the existence of hazardous substances in fish and in water. We also look at biodiversity, mostly animals, as there is little flora in deep waters. But we study the fauna on the sea bed and we are trying to measure noise and how, for example, it affects marine mammals,' said Mr Lassen.

Integrated approach to fishery advice

Mr Lassen said that in the near future he and his colleagues would like to see the development of collection and transmission of data automatically through satellites.

'Electronic logbooks would give the time and position of the boat at the same time as the information on the catch.



One of ICES' most important roles is to give advice and status reports on fish stocks and the marine environment to the European Commission's Maritime and Fisheries Affairs DG. Together with the European Environment Agency and the European Commission Environment and Maritime Affairs and Fisheries DGs, ICES also develops indicators. The indicators will help measure how well the European Union manages to reach its goal of achieving good environmental status of the EU's marine waters by 2021.

The data would be transmitted via satellite which would reduce the burden for the fisherman. However, there is a discussion in some countries in regard to who should pay for the investment in such equipment. Also, it requires standardisation so that the French deliver the same data as the Norwegians,' he said.

Further on, ICES would like to fully integrate an ecosystem approach into fisheries advice. Such an approach means that environmental factors are included in stock assessment. As an example, the amount and strength of Baltic cod hatched one year are closely linked to the inflow of salt water to the Baltic from the North-East Atlantic. Additionally, measuring water temperature and the amount of plankton can give an indication of the abundance of herring later on.

In an integrated approach the links between different species in the ecosystem are taken into account, as well as the fact

that some species or their living environment are harmed or killed during the fishing of another species.

'Right now, Eurostat's database only includes data on commercial fish. It does not give information on by-catches or damage to sea birds, for example. This would be one step towards the establishment of more integrated advice,' said Mr Lassen.

'One of the major challenges with integrated advice is that it has to be regional rather than based on a specific population. This means that data have to be more detailed and that datasets on the various components of the ecosystem are more integrated with one another. We also need qualitative indicators which would give trends rather than numerical values,' concluded Mr Lassen.

By Annika Östergren Pofantis, Eurostat Communication Unit



In the future, ICES would like to fully integrate an ecosystem approach into fisheries advice. Such an approach means that environmental factors are included in the stock assessment. The links between different species in the ecosystem should be taken into account, as well as the fact that some species or their living environment are harmed or killed during the fishing of another species.

Food safety data — investing in the future

Food safety data, as produced by Eurostat, deal with statistics on the safety of products used for human and animal consumption in the European Union, irrespective of whether these goods were manufactured in the EU or imported. Marleen de Smedt and Ana Maria Martinez Palou from the Health and Food Safety Unit at Eurostat spoke to *Sigma* about their work.



Ana Maria Martinez Palou, Head of the Food Safety Statistics Section at the Health and Food Safety Unit at Eurostat.

From farm to fork statistics

A dedicated section of five people in Ms De Smedt's unit, led by Ms Martinez Palou, deals with food safety statistics. 'High standards of food safety on our continent are one of the policy priorities of the

Ms De Smedt, the then Head of Unit, explained that the countries of the European Union have opted for a unified policy in the area of food safety, making sure that no harm to their populations could come from the food they consume. 'High standards of food safety, animal welfare and plant health are enforced and monitored jointly by all Member States and all available data is regularly sent to the European Commission,' she explained.

'Gathering data in this domain is relatively new,' Ms De Smedt said. 'Work on food safety statistics started in 2003. After extensive consultations with the Member States, we agreed on several fields of priority for further development, in which the work on common terminology and sampling methods continues to this day.'

European Commission and so the scope of our work is also dictated by European policymakers' needs,' said Ms Martinez Palou. 'The so-called "from farm to fork" approach means that we aim to trace and gather data relating to the food chain as a whole, starting with agricultural production and feeds, through to the subsequent food processing, its distribution and, finally, its consumption.'

The sheer size of the European food chain is huge. There are well over 14 million agricultural holdings registered in the EU, employing almost 13 million people. A further 6.6 million work in restaurant and catering businesses. The annual average harvest in the EU for cereals is 270 million tonnes, with over 20 million tonnes additionally imported every year. 'The list could go on almost endlessly,' said Ms De Smedt.



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'The so-called "from farm to fork" approach means that we aim to trace and gather data relating to the food chain as a whole, starting with agricultural production and feeds, through to the subsequent food processing, its distribution and, finally, its consumption,' said Ms Martinez Palou.

While compiling its data, Eurostat closely works with the EU Member States, the European Commission's Directorate-General for Health and Consumers, the Directorate-General for Agriculture and Rural Development, the European Food Safety Authority (EFSA), the European Centre for Disease Prevention and Control (ECDC) and other institutions.

'Often Member States send some of their data to the directorates-general, as required by the Commission regulations. These data are analysed at the DGs and then forwarded to us,' said Ms Martinez Palou. 'Other data come to us directly from the Member States and are made available to other institutions by us. Understandably, we are working hard on common terminology and definitions; no easy task in view of the fact that often data reporting differs widely depending on the requirements of various institutions.'

Among the priorities in the area of food safety statistics, Ms De Smedt listed control and monitoring activities, food consumption statistics and data on products with the so-called 'distinctive marks.' Major institutions involved in the production of those statistics form joint task forces, chaired by Eurostat, and work towards the further development of common methodologies and harmonisation of data,' said Ms

De Smedt. 'Naturally, some areas show more progress than others.'

Control and monitoring data

The area of the control and monitoring of food production is probably the most successful so far,' said Ms Martinez Palou. 'In 2007 the work of the task force was expanded into a technical group with the participation of all 27 Member States.'

Ms Martinez Palou said that in that field, the Health and Consumers DG receives most of the figures from Member States, following several regulations and directives. An important legal act was the regulation on food and feed controls adopted in 2004. 'This regulation obliges the Member States to set up a strategy and planning of controls for consecutive five years, which implies a stronger cooperation between the different national control bodies and should lead to better data quality,' Ms Martinez Palou said.

Ms de Smedt added that work on the common definitions and classifications, as proposed by Eurostat, started in 2005. 'Even though the full data harmonisation in this area does not yet exist, we managed to build a proper databank that



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According to Ms Martinez Palou, the need for reliable statistics on food consumption in the EU has grown enormously in recent years. Therefore, Eurostat is working on a first set of indicators for vegetable and fruit consumption and energy intake.

figures for 2005. We consult with the Member States on a regular basis to find out whether they wish to carry on with the data production in this area in the future.'

Products with distinctive marks

today can be consulted online by the data providers under restricted access,' Ms De Smedt said. 'However, the more controls are carried out, the more problems are found. This is why not all Member States are keen to publish their figures, which they fear could be misinterpreted. The resources of the statistical institutes are often stretched to their limits as it is.'

Food consumption statistics

According to Ms Martinez Palou, the need for reliable statistics on food consumption in the EU has grown enormously in recent years. 'The demands by policymakers but also other parties have gone up significantly since we put together all "from farm to fork" statistics in 2005,' she said.

Ms De Smedt explained that today food consumption data are obtained from three different sources. 'Firstly, there are the annual balance sheets, then the household budget surveys (HBS) taking place every five years; finally, figures also come from the dietary surveys; however, those are carried out rather irregularly from country to country.' In the field of food consumption statistics, Eurostat cooperates with the European Food Safety Authority, principally involved in the evaluation of dietary surveys.

Ms Martinez Palou added that none of the above data collection sources could be considered as sufficient for replying to all expressed data needs. 'For this reason, we focus our work on a set of priority indicators which can be calculated from data already collected in many countries from household budget surveys,' she said.

'We are working on the first set of indicators, such as vegetable and fruit consumption and energy intake,' said Ms de Smedt. 'Eurostat and the Member States agreed on the need for data collection in this area and I can confirm that currently 24 out of 27 countries have already sent us their

According to Ms de Smedt and Ms Martinez Palou, this last field constitutes an important challenge for European statistics producers. 'To start with, it includes data on three different groups of products,' said Ms De Smedt. 'They are: products with the Protected Designation of Origin (PDO), such as the Camembert cheese from Normandy, organic farming produce and genetically modified products, the so-called GMOs.'

The amount of data available for each group varies greatly according to Ms Martinez Palou. 'For instance, figures concerning organic produce have been collected since approximately 1997 and are available for almost all Member States,' she said. 'On the other hand, data collection on the PDO products, started in 2005, is voluntary. This means that some EU countries send us their data while others don't. Some Member States do not collect them at all.' (More information on organic farming can also be found on page 22.)

'The GMO products are the most controversial group, because these products mostly enter the European Union as imports from other countries, mainly as feed materials,' said Ms De Smedt. 'This is why we have focused our efforts on the amounts of main imported goods, such as corn for the feeding sector, but it is still incredibly difficult to identify them at the entry points.'

Ms De Smedt concluded by saying that the production of statistics in the area of food safety was growing dynamically despite difficulties with data harmonisation on a European level. 'I have no doubt that the huge changes in the methodology and sampling procedures that took place in this new statistical field in the last couple of years bode well for the future,' she said.

*By Lukasz Augustyniak,
Eurostat Communication Unit*

Food security in the United Kingdom

Stuart Platt is a statistician working for the Department for Environment, Food and Rural Affairs (Defra) in the United Kingdom. He was part of the Food Chain Analysis Group responsible for the preparation of the latest food security assessment for the UK government published in 2009. *Sigma* spoke to him about the complexities of the food security issue in the UK.



Stuart Platt is a statistician working in the Food Chain Analysis Group for the Department for Environment, Food and Rural Affairs (Defra) in the United Kingdom.

Statistics fundamental in the assessment process

The latest food security assessment prepared by Defra for the UK government is one of many reviews and studies that the de-

To start with Mr Platt explained how the term 'food security' was defined by Defra. 'We describe food security as access for consumers to sufficient amounts of safe and nutritious food at affordable prices. This means that the food supply chain must be reliable and resilient to shocks and crises. Food should also be produced in a way that is environmentally sustainable,' Mr Platt explained.

Mr Platt said that food policy was becoming increasingly important for the British government and that the role of Defra was to coordinate work in this field. 'The current debate has intensified in the wake of growing global demands, rising commodity prices and the drop of stocks worldwide. We are analysing potential challenges that could have a negative effect on the UK food chain and are making sure that the government stays fully informed and is able to react to both short-term shocks and long-term challenges,' said Mr Platt.

partment has produced in recent years. 'While our work primarily focuses on domestic issues, we bear in mind that the food security of our country is ultimately dependent upon global supplies and resource sustainability,' said Mr Platt. 'In preparing the current assessment we worked closely with our scientific advisers. In order to be able to explain trends and potential problems, you need to have both a solid base of statistics and experts who can analyse current trends and try to predict future ones.'

Altogether around 15 people, including five statisticians, were involved in the preparation of the Defra study. 'The study shows that, similarly to other members of the European Union, Britain has a very high level of food security. However, our country strongly depends on international markets and a significant amount of our food arrives here from overseas. It is then transported around the country by road and by rail. Bearing that in mind, we need to constantly be aware of any possible "weak links" that could affect the whole system,' said Mr Platt.



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Defra's latest study shows that, similarly to other members of the European Union, Britain has a very high level of food security. 'However, our country strongly depends on international markets and a significant amount of our food arrives here from overseas. It is then transported around the country by road and by rail. Bearing that in mind, we need to constantly be aware of any possible "weak links" that could affect the whole system,' said Mr Platt.

Mr Platt added that although the UK food industry is very resilient, it relies heavily on the use of different forms of energy, which remains a source of risk. 'This is why our work is crucial for the government's business continuity planning,' he said. 'We constantly develop possible scenarios that give ministers an idea of the level of our preparedness as a country.'

Novel ways of gathering data

Mr Platt added that Defra statisticians were finding new ways of gathering and presenting their statistics. 'We constantly get smarter on how we compile figures, finding new sources, and including more value added analysis of data,' said Mr Platt.

Sigma asked Mr Platt to explain how this innovativeness is translated into Defra's work. Mr Platt answered: 'A good example could be the novel way in which we obtain food price statistics. For a while now we have been trying to exploit the information the supermarkets put on their websites.'

'We have set up a "basket" to follow the real-time development of UK food prices and deliver it on a weekly basis to ministers and officials. The feedback has been very positive and the idea highly appreciated — our basket of retail food prices (and associated "dashboard" of food price drivers) helps analysts and policymakers understand what is happening to food prices in real time in an easy to understand and digest format.'

Efficiency through joining up datasets

According to Mr Platt, Defra has enough detailed data at its disposal. 'We run our own surveys, use available administrative sources, i.e. registers, and also use figures provided to us by the UK's Office for National Statistics and other government departments,' he said. 'Using these data, we have developed a broad range of sustainable food indicators (which go beyond the narrower issue of food security). As the user demands are growing so is the range of products we offer. If you take the animal health and welfare statistics, they were developed following queries from the British government.'

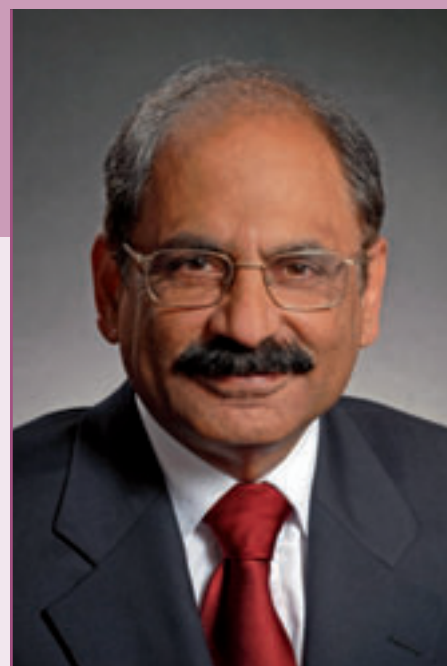
'What we need in the future is better use of the statistics we already have at our disposal,' said Mr Platt. 'To me, the real value lies in how datasets are analysed. We need to prioritise better between the compiling and analysis of data; we need to bring data that exist in different places together and then offer our users "smarter" analysis. Informed analysis will demonstrate the impact of our work and show politicians more clearly what they need to take into account when developing wider policy goals.'

For further information: www.defra.gov.uk

By *Lukasz Augustyniak*,
Eurostat Communication Unit

Statistics Canada — living up to its reputation

Based in Ottawa, Statistics Canada is the country's central statistical agency. As such, it has a federal obligation to provide statistics for the whole of the country, as Munir A. Sheikh, the Chief Statistician of Canada, explained to *Sigma*.



Munir A. Sheikh is the Chief Statistician of Canada.

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Mr Sheikh said that, in line with the current Statistics Act passed in 1971, the Canadian statistics bureau is an independent organisation. 'Although most powers under the Act are assigned to the Minister responsible for Statistics Canada, these are generally delegated by the Minister to the Chief Statistician,' explained Mr Sheikh.

Mr Sheikh said that, as a result, the Chief Statistician has sweeping powers to collect information on virtually any topic by either mandatory or voluntary surveys and to access administrative data files from other organisations for statistical purposes. 'We are mandated through the Act to "collect, compile, analyse, abstract and publish statistical information". We finance our work either from our base budget or from special-purpose funding provided by other federal departments,' said Mr Sheikh.

Mr Sheikh said that Statistics Canada follows a decentralised business model, in which 'subject-matter divisions have the authority and budget control to conduct their programmes and, at present, a great deal of discretion as to whether or not to use corporate services, corporate infrastructure and corporate standards.'

Mr Sheikh explained: 'Statistics Canada consists of six principal organisational units called "fields". All survey management and analytical work is done by the National Accounts and Analytical Studies, Business and Trade Statistics, and Social, Health and Labour Statistics Fields. In addition, Corporate Services Field, Census and Operations Field, and Informatics and Methodology Field play a supporting role in the statistical operations of the agency.'

Statistics — important part of daily life of the Canadians

'Most Canadians find out about our work through news coverage of our new information in television and radio broadcasts or the newspapers,' said Mr Sheikh. 'The media, but also members of the interested public, get their information from

our website, and especially the electronic publication called *The Daily* available on the website or by subscription.'

The Daily is Statistics Canada's official release bulletin, published since 1932. In 1996 it made the transition from paper to an electronic version. It appears every working day, except during the Christmas break, in Canada's two official languages, English and French.

'It is our policy that all new data must be released in *The Daily*. This practice ensures that all our users have access to new figures at the same time and reinforces our reputation as being impartial,' said Mr Sheikh.

The items in *The Daily* range from extensive studies to brief notices of new data availability in a particular area; all releases include contact information. 'All our major indicators, such as the gross domestic product, the consumer price index and the labour force survey, are released accompanied by analytical summaries in *The Daily*,' said Mr Sheikh. 'The summaries of the findings are normally written for the general audience and maintain strict neutrality. The media can retrieve releases from our website, participate in pre-release lock-ups or use a telephone hotline service to access each day's new information. They can also speak to our analysts, who are available for interviews on the day of the press release.'

The Statistics Canada website allows the public round-the-clock access to more detailed information about the stories they have read, seen or heard in the media. This comprehensive site consists of over 7 million pages of news releases,

data tables, in-depth analytical studies, articles and technical papers.

'In 2008/09 we recorded 17.5 million visits to the Statistics Canada website, and altogether 109.5 million pages were accessed,' said Mr Sheikh. 'However, we still offer paper versions of our flagship products, such as the *Canadian Economic Observer*, *Canadian Social Trends*, *Perspectives on Labour and Income*, *Health Reports* and the *Canada Year Book*, even though their content is also available online,' added Mr Sheikh.

Excellent reputation at home

Mr Sheikh said that his agency enjoys very good reputation and is perceived as a credible, relevant and independent source of information. 'In a major public opinion survey conducted in 2007, nearly 80 % of Canadians said that they had a positive impression of Statistics Canada, believing that it contributes to the quality of Canadian life. One quarter of Canadian Internet users reported visiting our site at least once in the previous 12 months,' Mr Sheikh said.

Munir A. Sheikh was appointed Chief Statistician of Canada on 16 June 2008 by the Canadian Prime Minister. Before this appointment, Mr Sheikh was Deputy Minister of Labour in the federal government.

Mr Sheikh has broad experience in government having held many senior level positions, among them that of the Deputy Secretary to the Cabinet, Associate Deputy Minister at Health Canada and at Finance Canada. As a Senior Assistant Deputy Minister, Tax Policy at Finance Canada, he was responsible for managing the Canadian tax system.

Mr Sheikh has a doctorate in economics from the University of Western Ontario and a Master's degree in economics from McMaster University in Canada. He has published extensively in academic journals in the areas of international economics, macroeconomics and public finance. He has also been a lecturer at Carleton University in Ottawa and the University of Ottawa.



Statistics Canada is situated in Ottawa and employs 6 000 people. Approximately 90 % of them work at the head office. The remainder work in regional offices providing a variety of communication and dissemination services in their area. Pictured is the Museum of Civilization and the Ottawa river.



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many initiatives to ensure that we get all the essential data while decreasing our demands on respondents,' Mr Sheikh said. 'We continue to expand our use of monthly and annual tax data in our business surveys. This has enabled Statistics Canada to reduce the response burden on businesses by nearly 40 %, while at the same time

'Non-partisan objectivity has always been a trademark of Statistics Canada,' said Mr Sheikh. 'In the past this was easier to attain since we were largely a "numbers factory". Over time, we have become much more involved in research and analysis. We ensure that our analytical work resulting from research is factual and maintains the same level of objectivity as our data collections.'

Quality of data paramount

The reputation of the agency is based on the quality of its figures. 'By quality we mean that the data we produce, largely using sampling procedures, are representative of the universe we are trying to capture,' Mr Sheikh said. 'At a time when statistical resources are more and more limited, and new funding increasingly harder to obtain, we have to cease some of the existing lower priority programmes to fund new statistical programmes that address emerging higher priority needs. In the process, we pay utmost attention that this trade-off does not impact on the quality of our products.'

Mr Sheikh added that given the fact that every data programme had its devoted users, his office had to overcome strong resistance each time a data collection or production line was stopped. 'We are working on a "re-allocation mechanism" that will allow us to smoothly shift resources from less relevant statistical programmes to the priority needs of today. These changes are being done in consultation with our user community.'

Efficiency and burden reduction high on the agenda

Mr Sheikh added that the issue of response burden reduction, particularly in the area of business surveys, was closely linked to the issue of priority setting. 'We have undertaken

maintaining our business survey programmes in the face of budget reductions.'

To create synergies and achieve immediate efficiency gains, Statistics Canada partly restructured in April 2009, eliminating one of its fields and bringing together work areas such as social and business surveys, data integration and research programmes, informatics and methodology, collection and processing operations, and corporate services.

The British North America Act, which created Canada in 1867, assigned responsibility for 'the census and statistics' to the federal government. This laid the cornerstone of Canada's statistical system. It also created a constitutional requirement for a decennial census, which was conducted for the first time in 1871.

In 1918, the Statistics Act created the national statistics office, the Dominion Bureau of Statistics. It employed 123 people, who used state-of-the-art card-punching and electric tabulating machinery. The first computer was installed in its offices in 1960 and, being a large group of machines working together, took up an entire wing of the main office building. The heat generated by their 10 000 vacuum tubes led to the rebuilding of the whole roof.

Today, Statistics Canada (name introduced in 1971) employs about 6000 regular employees. Approximately 90 % of them work at the head office in Ottawa. The remainder work in regional offices providing a variety of communications and dissemination services in their area. For interviewing, regional offices also use temporary employees (2 000 in February 2009). Every five years, that number increases to 30 000 people to meet the demands of the census collection activities.



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Mr Sheikh said that in the future, the office will develop a new, centralised architecture for data collection. 'We want to modernise the systems used to carry out surveys, including an improved Internet collection service for business and household surveys. The organisation structure, roles, responsibilities and business processes are also under review for increased efficiencies,' he said.

However, Mr Sheikh also said that recently Statistics Canada's decentralised model of operation had begun to show its limitations. 'There is evidence that any further increase in efficiency (improvement of quality assurance, acceleration of the implementation of new statistical programmes) may require a new "corporately optimised" business architecture.

This is why we created a dedicated task force of senior managers, which will review the current operational model of our agency.'

Active international player

Statistics Canada is an active player on the international statistical scene. 'We participate internationally in the development of standards and classifications. These standards relate to how we develop our statistics; the classifications help us in the process of defining, for example, industries, occupations, diseases, and products and services,' Mr Sheikh said.

Statistics Canada is involved in the work of the United Nations Statistical Commission, the Conference of European Statisticians, the Organisation for Economic Cooperation and Development (OECD) and other international bodies. 'In addition, we maintain strong bilateral relationships with many countries, such as the US and Australia,' he said.

In 1991, Eurostat, the United States Office of Management and Budget and Statistics Canada signed a cooperation

agreement, subsequently renewed until 2005. While the agreement is no longer in effect, mutual cooperation continues on many fronts. 'As a result of extensive international consultations, we are currently preparing the implementation of new standards for the system of national accounts and a new commodity classification,' Mr Sheikh said.

Leader in developing innovative statistical methods

Asked about the future challenges, Mr Sheikh said that he would like to maintain Statistics Canada's reputation as a leader in many areas of statistical production. 'To do so, we are developing a new, centralised architecture for data collection. We want to modernise the systems used to carry out surveys, including an improved Internet collection service for business and household surveys. The organisation structure, roles, responsibilities and business processes are also under review for increased efficiencies,' he said.

According to Mr Sheikh, policymakers are particularly interested in the social and business micro data. 'Thus, we are developing a system protocol that would offer them a real-time remote access to the social micro datasets whenever required. We are also conducting pilot projects in the research data centres to make available to researchers administrative data files from federal and provincial government departments,' he said.

Another challenge identified by Statistics Canada relates to the current economic crisis. 'The question we have asked ourselves was: "Can a statistical agency be of special help during a crisis to provide temporary specialised data?"' said Mr Sheikh. 'In collaboration with the United Nations Statistics Division and Eurostat, Canada hosted an international seminar on this very topic at the end of May 2009. The proposed approach was to determine specialised data needs through more consultation with user communities, to produce temporary data more rapidly and to communicate figures more effectively to policymakers and members of the general public.'

Mr Sheikh concluded: 'The methods that we use to collect, compile, analyse and publish our data have evolved over the years to adapt to societal change. We have been successful in providing timely and accurate information to describe Canada's society and economy over time. Thanks to our highly specialised and dedicated workforce I am confident that we will continue to meet new challenges with all the enthusiasm and the energy that will be required.'

By Lukasz Augustyniak, Eurostat Communication Unit

Statistics Romania celebrates 150 years of official statistics

Last July, Statistics Romania celebrated 150 years of official statistics. The celebrations gathered statisticians working in academia, business and government institutions, as well as international visitors. The Head of the Romanian National Institute of Statistics, Professor Vergil Voineagu, said he was proud of the progress the Romanian statistical system had made over the last 20 years.



Professor Vergil Voineagu, Head of the Romanian National Institute, said he was proud of Statistics Romania's anniversary as it made the office one of the oldest institutions of official statistics in the world.

© European Union

‘**S**umming up our accomplishments at this time, I can assure you that today Romanian official statistics are modern and reliable, holding an important position and playing a major role within the European statistical system,’ said Professor Voineagu.

Looking back, Professor Voineagu said that the 1989 revolution and accession to the EU had given the direction for methodological refinement, comparability, performance and harmonisation with international standards — particularly with those of the European Union.

‘The process of reintegrating Romanian statistics into the international context was not easy, since a large number of

actions needed to be accomplished during a short period of time. But we were successful due to the efforts, the professionalism and the capacity to adapt to change of all statisticians involved in the work,’ he said.

Practically the restructuring of the Romanian statistical system involved revising methodologies, standards and tools related to statistical surveys on economic and social phenomena and processes, in compliance with international concepts and norms.

‘The reform has also meant creating a new framework for Romanian statistics — improving reliability, consistency and relevance of statistics. During a very short time we had to



Professor Vergil Voineagu, Director-General of Statistics Romania, in the first row in the centre of the picture with a red tie, is flanked on left by Walter Radermacher, Director-General of Eurostat, and on right, also wearing a red tie, by Mugur Isarescu, Governor of the Romanian National Bank.

revise and clean up data from methodological and subjective irregularities of the communist era. For instance, we revised the basic macroeconomic indicators to ensure reliability to establish confidence in their capacity to analyse the economy,' said Professor Voineagu.

'Implementing all EU-related statistical legislation, the statistical *acquis*, which meant adapting Romanian statistics to European standards, has also been a critical part of the work since 1991,' he continued.

Professor Voineagu said that the successful outcome would not have been possible without the support of Eurostat, EU national statistical offices and the intensive and fruitful assistance granted through national and multi-beneficiary Phare programmes.

New statistical law

Today, Romanian statistics comply with international methodologies and are fully comparable with other EU Member States. Professor Voineagu hopes that his institution will continue to stand strong, with the help of the country's new statistical law, 'Law on the organisation and functioning of official statistics in Romania', which entered into force in May 2009.

The new law, which is adapted to the legal framework of the European Union, promotes the impartiality, independence and scientific principles of official statistics. It underlines the importance of standing up to any type of pressure on statistics as an indispensable condition for claiming professional independence, reliability of statistical data, confidentiality and large-scale dissemination of statistics.

'The newly adopted law signals the birth of a national statistical system. It marks the shift from a system with one national statistical institute, which has a monopoly to organise and manage statistical data and information, to a system of statistical producers. It will also enable the use of administrative sources when compiling national statistics,' said Professor Voineagu.

Financial crisis in focus

Today, Statistics Romania focuses on reducing the response burden while maintaining data quality and using electronic data collection methods as well as avoiding the overlap in providing decision-makers with statistical data.

In the near future, Romanian statisticians will also have to accomplish several major tasks, which are of both national and international interest. Among others, they will conduct a population and housing census, as well as an agriculture census. The office will also complete the revision of the general industrial classification of economic activities within the European Communities (NACE).

'Last but not least, we aim to compile and disseminate high-quality data which can be used by the government and Romanian society to help the country out of the economic and financial crisis,' said Professor Voineagu.

Edited by the Eurostat Communication Unit

Statistics Romania's 150th birthday was celebrated in July 2009 with a religious ceremony. The celebration continued at the institute's headquarters and gathered statisticians working in academia, business and government institutions, as well as international visitors.



150 years of
ROMANIAN OFFICIAL STATISTICS
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