CASE STUDIES ON THE INTEGRATION OF ENVIRONMENTAL CONCERNS. THE PROTECTION OF FARMLAND BIODIVERSITY

STUDII DE CAZ CU PRIVIRE LA INTEGRAREA ASPECTELOR LEGATE DE MEDIU ŞI PROTECŢIA BIODIVERSITĂŢII FERMELOR AGRICOLE

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Abstract: *This report aims to provide a fair reflection of the progress, the achievements and obstacles in the integration of environmental concerns into EU agriculture policy, based on indicators developed in the IRENA operation. It also tackles limitations to successful policy implementation at Member State level, and challenges ahead. Policy examples from some Member States aim to show good practice in agri-environmental policy implementation or design. Due to the scope of the IRENA operation the analysis focuses on the EU-27 Member States. Assessing progress of environmental integration in any policy field is a challenging task. Progress depends not only on institutional structures and processes, or on the importance of environmental issues to policy making in a given policy area. It is also influenced by factors outside immediate policy influence, such as market trends, technological developments, international trade issues and interactions with other sectors. It is beyond the scope of this report to provide a full analysis of all relevant factors.*

Rezumat: *Acest raport are ca scop oferirea unei imagini reale a progresului, a realizărilor şi obstacolelor în procesul de integrare a aspectelor legate de mediu în politica agricolă a Uniunii europene, bazându-se pe indicatorii descrişi în operaţiunea IRENA. Totodată acest raport tatonează limitele existente în implementarea cu succes a politicilor la nivelul statelor membre şi provocările ce urmează. Exemple ale politicilor din unele state membre tind să arate o practică eficientă de implementare sau creare a politicii agricole şi a mediului. Datorită scopului operaţiunii IRENA, analiza se axează pe cele 27 state membre ale UE. Evaluarea progresului integrării mediului în oricare domeniu al politicii este o sarcină provocatoare. Progresul depinde nu doar structurile şi procesele instituţionale sau de importanţa problemelor legate de mediu în crearea unei politici cu privire la o anumită zonă. Este de asemenea influenţat de factori care nu se află în imediata apropiere a influenţei politicii, cum ar fi tendinţele pieţei, dezvoltările tehnologic, problemele comerţului internaţional şi interacţiunile cu alte sectoare. Prezentarea unei analize complete a tuturor factorilor relevanţi în acest sens depăşeşte scopul acestui raport.*

Key words: *report, target, analyses, measures, standards, scheme, biodiversity*
Cuvinte cheie: *raport, ţintă, analiză, măsuri, standarde, schemă, biodiversitate*

INTRODUCTION

Assessing progress towards the integration of environmental concerns into EU agriculture policy is a challenging task. So far, this report has identified agricultural driving forces that lead to impacts on the environment. Commitments made at EU and national level to resolving environmental problems have been identified and the potential of various policy instruments to help resolve such problems has been assessed. The use of some of these policy instruments at Member State level has been reviewed and patterns of implementation described.

It is clear from this work that, in general, progress has been made in integrating environmental concerns into EU agriculture policy, particularly its rural development pillar.

Environmental concerns in relation to agriculture have been identified, commitments to resolving those problems have been made, and policy reforms have resulted in the design of agri-environmental policy instruments with the potential to address them. The IRENA indicators, as well as other information gathered, show variable policy implementation patterns in EU Member States.

However, this task does not allow evaluating the extent to which policy instruments are being used effectively to target specific environmental issues. The remainder of this section attempts, therefore, to assess more comprehensively the extent of policy integration by using two case studies. The environmental issues of biodiversity protection and nutrient management have been chosen to analyze the degree to which policy instruments are being used to address these issues. Comments on the usefulness of the 42 IRENA sub indicators in this process are made and the availability of other information relating to policy implementation is assessed. In particular, the extent to which policy instruments are being used in a targeted way is considered, including examples of best practice.

Geographic or spatial targeting is only one element in the effective use of (agri-environmental) policy instruments in tackling environmental issues. In the context of this report it was not possible, however, to gather information on the national (or regional) design and environmental impact of the different policy instruments analyzed. Some points regarding these issues and appropriate policy mixes are drawn out in selected examples of good policy practice. As a first step relevant policy instruments are reviewed (building on previous chapters). Then we consider, as far as possible, whether they are applied in areas where environmental management needs to be improved.

Using statistical analysis it is thus possible to determine whether relevant policy measures are targeted on areas of environmental concern. To use the NUTS 2/3 level information that is available for many IRENA indicators we constructed 68 regions for the EU-27 as common denominator between the indicators employed. This allows a more differentiated targeting analysis than is possible with national data. As no regional data on agri-environment schemes were available for France and Sweden, these countries were excluded from the statistical analysis due to the large variation in agronomic and climatic conditions across their national territories.

MATERIALS AND METHOD
1 THE PROTECTION OF FARMLAND BIODIVERSITY
1.1 ANALYSIS OF IRENA INDICATORS IN RELATION TO BIODIVERSITY PROTECTION

The following analysis focuses on IRENA No. 1, 2, 4 and 7, which provide data on the extent to which different policy instruments contribute to the protection of farmland biodiversity and hence to policy integration. IRENA No.1 (Area under agri-environment support) is particularly important in as much as agri-environment schemes are specifically aimed at achieving positive environmental management. Two sub-indicators showing protection effort were constructed.

These are the total agri-environment expenditure per ha UAA, and the share of agri-environment area under nature and landscape schemes per ha UAA. There is considerable variation, both between and within Member States, in terms of annual expenditure per ha of UAA as well as in terms of the agricultural area enrolled in agri-environment measures. In itself, this indicator does not provide direct information about the environmental effectiveness of agri-environment schemes, nor whether schemes are targeted at those areas where biodiversity protection is most needed (IRENA No. 4 is relevant here). It does, however, give some indication of the policy response at regional or Member State level. Low levels of

expenditure per ha of UAA and low coverage of schemes in some countries, especially in southern Europe, suggest that the potential of this policy instrument for protecting farmland biodiversity is not being fully realized. IRENA No. 2 (Regional levels of good farming practice) shows the extent to which Member States have defined good farming practice standards for biodiversity protection. All countries apart from Germany, Italy, the Netherlands and Finland include standards in GFP that relate to biodiversity protection. In some countries, such as Greece, Sweden and the United Kingdom, such standards appear to be a priority in relation to other environmental issues. While the indicator gives some sense of whether biodiversity standards are a priority or not, it is not sufficiently detailed to show what aspects of biodiversity protection are included.

IRENA No. 4 (Area under nature protection) shows the proportion of Natura 2000 sites covered by targeted habitats (those included in Annex 1 of the habitats directive) that depend on a continuation of extensive farming practices, such as hay-making or extensive grazing. The share of targeted agricultural habitats within Natura 2000 ranges from 0 to 82 % for 381 administrative regions of the EU-27 with an average of 17%. The United Kingdom, the western part of the Iberian peninsula, most of Italy and southeast France as well as the northern part of Scandinavia have high proportions of Annex 1 habitat types in their Natura 2000 sites. These are areas where high proportions of extensive agricultural habitat types are protected under the habitats directive.

In order to maintain these areas of conservation importance, appropriate management regimes - primarily extensive farming practices - need to be maintained or introduced. This indicator shows the degree of importance Member States place on the protection of farmland biodiversity in as much as they are prepared to designate important sites using the habitats directive. However, it does not provide any information on the management of such sites or on the extent to which biodiversity is actually protected.

IRENA No. 7 (Area under organic farming) shows the area under organic farming and the share of organic farming area in the total utilized agricultural area. In 2002, the organic farming area reached 3.7 % of the total UAA for the EU-15, up from 1.8 % in 1998. Austria, Italy, Finland, Sweden, Denmark and Germany had a higher share than the EU average. In itself, organic farming is not a specific biodiversity protection measure but rather a system of farming that results in general environmental conditions that have been shown to be beneficial for biodiversity (IRENA No. 7). The area covered by organic farming is therefore only an indirect indicator of farmland biodiversity protection. The currently available information does also not allow a site-specific analysis of whether organic farming is promoted in, or targeted on, specific areas of conservation concern.

1.2 ANALYSIS OF THE SPATIAL TARGETING OF POLICY INSTRUMENTS USING IRENA INDICATORS

Having evaluated the four IRENA indicators above, data on the spatial distribution of three of them (No. 1, No. 4, and No. 7) were cross-linked to see whether they show spatial overlap, i.e. are „targeted" on each other. The "biodiversity hotspots" to be primarily addressed by relevant policy response measures can be represented by IRENA indicators 4 and 26 ("Area under nature protection" and "High nature value farmland"). The targeting analysis investigates whether selected policy responses ("Area under agri-environment schemes" and "Area under organic farming") show a geographical overlap with the "biodiversity hotspots". An effective policy targeting is likely to occur if the "hotspot" regions would have a larger area under agri-environment or organic farming management than other regions.

For this purpose the geographical information was aggregated to the reporting level of IRENA No. 1, excluding Sweden and France for which no regional data could be obtained.

This resulted in 68 regions in the remaining EU-27 territory. The degree of implementation of agri-environment measures (IRENA No. 1) and organic farming (IRENA No. 7) in the targeted agricultural areas identified by IRENA No. 4 was analyzed (no geographical data were available for IRENA No. 26).

IRENA No. 4 identifies agricultural habitats within Natura 2000 sites that require maintenance via extensive agricultural management. 27 regions of the 68 have a significant share (above 17 %) of these targeted agricultural habitats. Of these 27 regions:

• 16 regions have an above average regional expenditure on agri-environment schemes (2000–2003 average);

• 8 regions have an above average regional area (ha) under landscape and nature related agri-environment measures;

• 12 regions have an above average share of organic farming.

A comparison of the number of the 27 regions selected for IRENA No. 4 that also have above average values for the other indicators showed that there was no good geographical match between the indicators. A good match would be indicated if the indicators chosen for comparison had a similarly high number to that of IRENA No. 4. However, of the 27 regions selected for high values in indicator No. 4 only 12 had a high share of organic farming area. Equally, only 16 (8) regions with a high share of Natura 2000 agricultural habitats also had a high share of agri-environment scheme area (or nature and landscape oriented agri-environment contracts), respectively.

To draw clearer conclusions, two statistical tests were carried out (ANOVA and chi square test). These showed that there is no statistically significant relationship between regions with a high share of targeted Natura 2000 habitats and any of the other three indicators. There is therefore no evidence of spatial targeting of the selected policy measures on regions with a large biodiversity resource to be protected on the basis of IRENA No. 4.

1.3 POSITIVE EXAMPLES OF AGRI-ENVIRONMENT SCHEMES

The environmental effectiveness of agri-environment schemes does not only depend on their spatial targeting but also on the design of the scheme prescriptions. It is not possible to provide an in-depth review of such aspects within this report for further details with regard to biodiversity. However, to give adequate regard to the important issue of effective implementation three national agri-environment scheme examples are reviewed. These show how good design and implementation of policy instruments can support policy integration objectives. The following paragraphs describe approach and results of selected schemes in Germany, the United Kingdom and Spain. Germany the German land Baden-Württemberg has introduced a floristic field method in its agri-environment scheme (the "MEKA programme") to additionally reward farmers according to the plant diversity of grassland sites. The method, co-initiated by BirdLife Germany, ensures that farmers receive extra agri-environment payments for grassland sites that contain at least four plant species or genera from a catalogue of 28 species. To simplify identification, the catalogue includes only herbal species but no grass species since these are more difficult to identify.

The farmers receive a leaflet with color pictures of all mentioned species in order to identify these themselves. A reward of 50 EUR per hectare is given if at least four of the species are found along a diagonal transect (one metre wide) of the plot, which has been divided into three pieces (each piece must contain the species). The site can also be divided into smaller plots according to natural boundaries. The farmers submit the information on their species-rich grassland in the frame of their scheme applications.

However, a control system with spot checks is maintained by the regional authorities. In spite of initial scepticism among farmers and authorities, the new approach has been

introduced successfully and effectively encourages farmers to better incorporate nature conservation objectives into their grassland management.

The arable stewardship pilot scheme (ASPS) was established in 1998 and ran for three years. The objective was to assess different arable management options for conserving and enhancing farmland biodiversity. The scheme's particular aims were to provide feeding and breeding sites for declining farmland birds, to encourage the establishment of a range of arable plants (as well as improving plant diversity), and to provide habitats for a wide range of mammals, insects and spiders. The pilot scheme was launched in the West Midlands and East Anglia (to test areas with different soil and farming systems). It offered payments to participants, through either five or six-year agreements, to manage arable land under five main options that aim to encourage wildlife. Options included overwinter stubbles, undersown spring cereals, beetle banks and wildlife seed mixtures. Despite some limitations, monitoring results indicated that the pilot scheme was delivering biodiversity benefits, and selected options have now been incorporated within the England wide Countryside Stewardship scheme (Evans et al., 2002).

This shows a good example for using scientific evidence from pilot studies in final scheme design. The application of this regional agri-environment programme started in 1993. The objective was the introduction of agricultural practices compatible with the conservation of the habitat of steppe birds. In the beginning, the programme was designed around four types of contracts. The first two, were offered in different sub-regions of the programme but were largely identical. The last ones (3 and 4) aimed at the long-term set-aside of land and at the conservation of rare crop varieties.

The results of this agri-environmental programme have been significant. In 2000, the last year where new applications were admitted, the number of type 1 and 2 contracts was 2 614 with a total area of 215 000 ha (close to the 13% of potential area), and a total cost of 21.4 million EUR. In the same year, the number of type 3 and 4 contracts was 287 with an area of 4 465 has and a total cost of 0.94 million EUR.

In 1998, a first evaluation of the programme showed a change in production trends on the farms under agreements, with increases of fallow (13%) and legumes and grassland (5%), and a decrease of cereal area (17%). The reduction in the use of fertilizers was estimated to be 29% and the area treated with chemical products was reduced by 13 %. Based on a regional census, the study demonstrated an increase in the great bustard population during the last 10–15 years, which among others factors is ascribed to then regional agri-environment scheme. In general, it estimated that the cereal steppes programme had succeeded in improving habitat quality, changing the homogeneous landscape structure and achieving good conditions for the conservation of steppe bird populations.

RESULTS AND DISCUSSION

a) The irrigable area in EU-12 increased by 12 % from 1990 to 2000. The majority of this increase occurred in Mediterranean countries where water abstraction rates for agriculture are already highest. According to available data, the share of agriculture in water use in the EU-15 remained stable during the 1990s, at about 50 % in southern EU-27 Member States compared to only 7% in northern EU-27 Member States.

b) Diffuse pollution from agriculture is a major concern for the quality status of ground and surface waters. Gross nutrient balance data and nitrate concentrations in rivers show that this is a particular problem for north-western Member States. Large gross nutrient balances appear to be linked to high livestock densities but regional differentiated spatial analysis of the problem in the affected countries.

c) Changes in agriculture are a key factor in the decline of biodiversity. This is both due to agricultural intensification as well as the abandonment or reduction of traditional land uses and farm practices. Current farm trends do not appear to favour the maintenance of high nature value farmland and of agricultural habitats in Natura 2000 areas. Relevant agri-environment schemes and other policy measures should be more targeted on key biodiversity areas on farmland.

CONCLUSIONS

a) Implementation of relevant policy instruments at national level remains uneven and the potential for effective policy integration does not appear to be fully utilized in some EU Member States. The approaches presented in the case studies from northern and southern EU-regions show, however, that innovation and integration success are feasible.

b) Gross nitrogen balance is the best indicator of nutrient leaching risk in agriculture but this indicator is currently not developed at regional level. A spatial targeting analysis is therefore not feasible for nutrient management issues. The (cost-) effectiveness of agri-environment schemes with regard to nutrient leaching could not be investigated. However, economic analysis suggests that other policy measures, such as regulation or taxes, can be effective instruments in dealing with nutrient pollution. Sweden shows a positive case study on the use of agri-environment schemes for nutrient management, in combination with other measures. Effective policy action in this field is likely to include elements of environmental regulation and the polluter pays principle.

c) The complex political, socio-economic and technical background that underlies the process of improving environmental integration in agricultural policy limits the possibilities for drawing firm conclusions. Policy targeting remains only a proxy indicator for the positive environmental outcome that is to be achieved via policy integration. These problems are reinforced by a lack of 'policy-off' reference areas (where the measure in question is not applied), comparative or longer-term studies.

d) Other important questions in agri-environment policy, such as value for money, free rider issues, change or maintenance of agricultural practices, could not be addressed at all. This needs to be done in detailed research projects that focus specifically on such issues.

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