CAP, nature conservation and physical planning

Primdahl, Jørgen; Brandt, Jesper

Published in:
CAP and the regions

Publication date:
1997

Document Version
Early version, also known as pre-print

Citation for published version (APA):
Primdahl, J., & Brandt, J. (1997). CAP, nature conservation and physical planning. In C. Laurant, & I. Bowler (Eds.), *CAP and the regions: Building a Multidisciplinary Framework for the Analysis of the EU Agricultural Space* (pp. 177-186). Editions Quae.

CAP, nature conservation and physical planning

J. PRIMDAHL AND J. BRANDT

Abstract

Four arguments for studying the relationship between CAP, nature conservation and physical planning policies are presented. A conceptual model for the relationship between public regulation, farm decisions and landscape change is set up with the objective of structuring regulation-related research at different levels.

The implementation of public regulations has different effects on farm owners' and farm producers' decisions. These in turn may influence landscape structures and functions, resulting in landscape changes. Further, landscape changes if documented and perceived negatively may result in redesign of public regulation.

Finally, it is argued that case studies are required if the aim is to understand the complex relationships between regulation, farming, and landscape. A few case sampling strategies are mentioned.

Résumé

Quatre raisons d'étudier les relations entre la PAC et les politiques de protection de la nature et d'oménagement du territoire sont exposées. Un modèle conceptuel des liens entre réglementations publiques, prise de décisions des agriculteurs et transformation de l'espace rural a été élaboré afin de structurer à différents niveaux les recherches portant sur ces réglementations.

Les effets des réglementations publiques diffèrent selon que l'on s'intéresse aux décisions des propriétaires du foncier agricole ou à celle des utilisateurs de ce foncier. En retour, ces décisions peuvent induire des transformations de l'espace rural en infléchissant ses structures et ses fonctions. Enfin, si ces transformations sont établies et perçues négativement, elles peuvent conduire à une redéfinition des réglementations publiques.

Pour finir, on fera ressortir la nécessité de recourir à des études de cas pour comprendre les relations complexes entre réglementation, agriculture et espace rural. Quelques procédures d'échantillonnage sont exposées.

Introduction

The intention of this paper is to present some perspectives and methodological observations on studying the Common Agricultural Policy (CAP) in connection with nature conservation and physical planning policies. There are several reasons for studying these interrelations: knowledge of these types of public intervention and how they affect rural change and landscape dynamics is useful if the CAP is going to be improved or even reformed; these relationships are quite unknown today - they are highly complex and consequently they must be studied in specific contexts, that is through the use of case studies.

We find four concrete arguments why studies of this type are needed:

First of all, the Common Agricultural Policy has had, from the very beginning, a tremendous influence on rural land use and has consequently a growing interest in nature conservation. The influence has grown through the years in parallel with the increase of the CAP budget and the growing number of member states and, following the reform in 1992, with a substantial part of the payments being changed from production-based towards land-based subsidies. The main objectives have been to reduce overproduction and to maintain an income for farmers by replacing price-support with land-based subsidies for the main crops, combined with a claim for set-aside areas for agricultural units above a certain size. The connection between CAP and land use is also an important part of the Concerted Action project *"CAP and the regions"*.

Secondly, beside the CAP there have been different types of structural policies related to specially designated areas, so that physical and regional planning, often with an environmental and conservation dimension, has been present from the very beginning. In fact, *ex ante* knowledge concerning agricultural structures and preferences and motivations by farmers have proved to be important parameters for the successful designation of such areas.

Thirdly, if the use of cross-compliance becomes more widespread, it will without doubt add claims from nature conservation and planning issues. Within such a framework a policy design will presuppose knowledge on relationships between agricultural land use, landscape structures, and conservation values.

Finally, the fourth argument for studying the relationship between CAP, nature conservation and planning has to do more fundamentally with basic research in rural land use changes and landscape dynamics. If we want to understand rural changes, public regulations must be included. This is necessary for the understanding of both short term and long term changes. In addition, since most regulations affecting the agricultural landscape are regulating the farmers'/owners' behaviour, rather than the landscape directly, we need data on farmer decisions concerning landscape changes as well.

1. A model: public regulations - farming - landscape

A conceptual model for the relationship between public regulations, farmer decisions, and landscape changes is presented in figure 1.

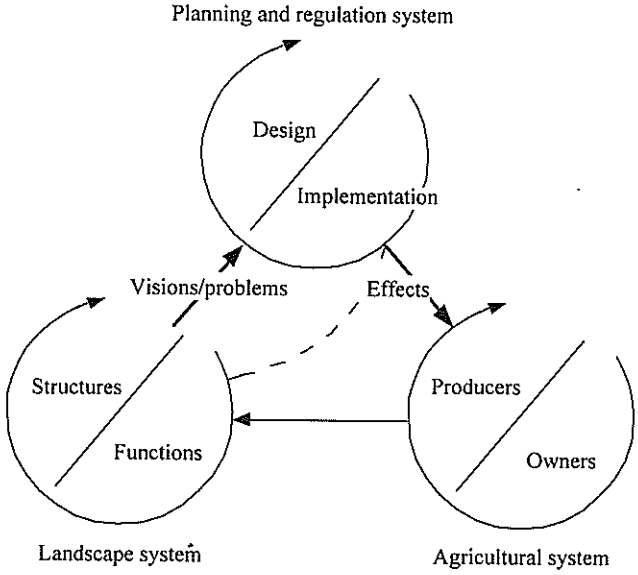

Figure 1. The relationships between public regulations, farmer decisions and landscape change. A conceptual model

The model deals with the regulation system, the agricultural system at farm level, the landscape system, and the relationship between the three systems. It has to be stressed that external issues of high importance, like macroeconomics, are not considered in this model.

The purpose of the model is to structure regulation-related research at different levels. Regulations are usually introduced when there are problems in the society which are believed to be avoidable and/or solvable through governmental intervention. However regulations for the future are designed on current problems developed in the past. For the implementation of regulations, we use a simple operational definition of implementation, namely that regulations are implemented whenever they are in use (Primdahl, 1989).

Implementation effects are usually - in this context - effects on farmers' or owners' decision making. We have found it quite useful to distinguish between decisions made by the

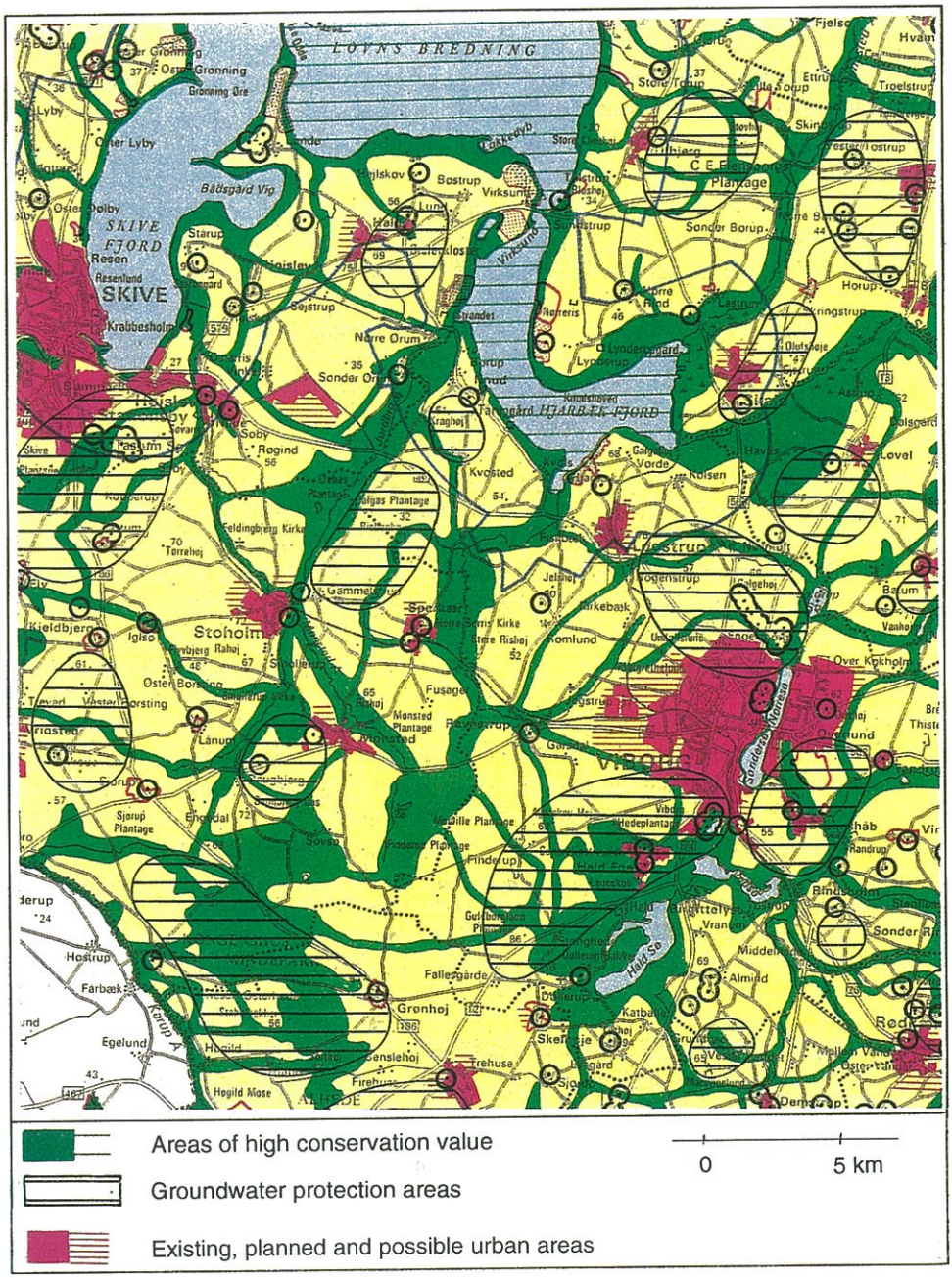

Figure 2. Section of the 1994-2006 regional plan for Viborg Country in central Jutland. Most of the conservation areas and some of the water protection areas are designated as Environmentally Sensitive Areas related to EEC Regulation n° 2078/92

farmer as a producer and by the farmer as an owner (Primdahl, 1994). Decisions made by farmers/owners affect landscape functions and structures, and the tension between existing structures and new functions are the main internal force behind landscape dynamics.

2. Public regulations

The CAP itself is beyond all comparison the most important single type of public regulation affecting landscape changes. It is also the most expensive one. Without the CAP, European landscapes would change drastically. Other EU measures, especially the structural funds, are also having major effects in some regions. National agricultural policies vary in importance among the member states. The Danish Agricultural Act, for instance, provides tight regulation of acquisition rights for farm properties and it is usually not possible to own a farm without living on the farm - to mention just one important provision.

Through the 1980s, a number of new types of regulation for environmental purposes has been developed. Ground water protection has often been an important consideration, together with the promotion of ecological networks and landscape stabilisation (EECONET and Futura 2000). All of these features are beginning to influence regulation and physical planning in the countryside (Jongman, 1995; Landschap, 1995).

The importance of physical planning and nature conservation differs significantly between the member states. In general the northern states have highly developed planning systems regulating urban growth and non-agricultural rural changes, including building rights in the countryside. There is also a long tradition in northern Europe for conservation regulations, but the national strategies are very different. The usual pattern is that nature conservation is centralised, with national parks or similar central designations as cornerstones, whereas physical planning usually is a local governmental activity. In some member states, national designations for the nature conservation sector have been utilised as points of departure when the Environmentally Sensitive Areas (ESA) are designated. This has been the case in the UK and the Netherlands, whereas the ESA-designation in Denmark has been linked to regional plans at the county level (see figure 2). This means that the physical planning process, through the linking of plan objectives to agri-environmental measures, is becoming much more pro-active. Thus, the plan shown in figure 2 will affect future rural landscape changes to a higher degree than a similar plan a few years ago.

Summing up, the tendency in recent years to integrate agricultural and environmental issues has resulted in closer links between the domains of agriculture, nature conservation, and planning policies (Baldock *et al.*, 1993). These integrative attempts mean that spatial designations are playing a growing role for farmer decisions. On the other hand farmers' preferences and willingness to co-operate is becoming more and more important in implementing rural policies related to the CAP.

3. Farmers' decisions

Farmers' decisions are not only affected by public regulations. Technology, socio-economics, cultural values, and the natural environment are important change factors not mentioned in figure 1 (Brandt *et al.*, 1996). With these reservations, this paragraph is about farmers' decisions concerning public regulations.

There is nothing new in public regulation of agricultural decision making. In fact, these types of regulations belong to the oldest part of public regulations, such as the "Landscape Acts" common in the Nordic countries in medieval times, e.g. the Faeroese *Sheep letter* from 1298 (Brandt, 1993). When regulations have to do directly and only with agriculture, and the owner is also the producer, then there is no point of making a distinction between the "owner's" and "producer's" decisions. When agricultural policies are broadened out, more and more components will have to do with other issues than production itself. In addition, the producer and the owner are in some areas two different people because of tenant farming. When it comes to landscape changes like conversion of arable land to grasslands, planting of hedgerows, thickets and forest, digging of ponds, removal of dikes and drainage systems in order to re-establish wetlands structures etc., then the owner's behaviour is of more interest than the producer's. Even when the producer is the same person as the owner, the "producer-type" of decisions may be quite different from the "owner type" ones in terms of time perspective and economic premises. This is why we distinguish between owners and producers.

The distinction seems of growing importance because of changes in the owners' interests: during the industrialisation process of the sixties and seventies agricultural owners were focused on production optimisation from a narrow agricultural point of view. In the post-productivist process of the 1990s (Chapter 9) more emphasis is put on non-agricultural aspects of the use of the landscape, especially as regards the strategy of owners, whereas producers will stick to an agricultural strategy. Thus, many Danish farmers, who are both owners and producers, today admit that their strategy of landscape changes during the seventies, resulting in a rapid removal of hedgerows and other types of small biotopes, were in fact not in their interests as owners. The economic benefit of habitat removal was often minimal and more related to the ideology of efficient farming than to a documented economic necessity, whereas the negative influence on the biological content, function, stability, amenity and recreational value of the landscape has been considerable (Brandt, Agger 1988; Brandt, 1991).

In areas with a long tradition of a co-operative production structure, as in Denmark where farmers own most of the means of production in the dairy and meat industry, the reform of the CAP causes increasing conflicts between the perspectives of producers and land owners.

The distinction between the two types of decisions in empirical studies may require personal interviews. Such interviews should concentrate on decisions related to real actions, resulting in changes in the land use or land cover. This should ensure that the analysis will include all aspects of relevance, including the often complicated side effects of the primary changes.

4. Landscape change

In landscape ecology, three characteristics of the landscape are often emphasised: structure, function, and dynamics (Forman and Godron, 1986). A more practical land-use oriented distinction between pattern, function and change (with landscape function as landscape ecology *sensu stricto*) is used (Zonneveld, 1995). Thus, the pattern of an agricultural landscape is shaped by previous functions, that is mainly by previous agricultural practices, whereas the future of the agricultural landscape is, to a high degree, determined by present pattern and function. However, since non-visual structures such as ownership also influence the landscape pattern, the broader term "structure", including landscape patterns, will also be used in the following discussion. Tensions between structure and function often result in landscape changes.

We find it useful in describing landscape change to focus on relationships between landscape functions and structure. The relationship is however not always a clear-cut one, which is particularly true when agricultural policies alter from being production oriented (i.e. affecting landscape functions) towards land oriented (i.e. affecting landscape pattern).

Landscape pattern is often described as a network of patches and corridors embedded in a matrix of the most dominating type of land cover. In most European areas the matrix will be dominated by agricultural land use and the network by natural and seminatural areas of permanent vegetation (or water), including the so-called small biotopes developed in close relation with the agricultural use of the landscape. Modern landscape ecology is especially engaged in the description and analysis of the many important ecological functions of the network, although it takes up a minor part of the total area. From an agro-environmental point of view, functional landscape analysis will focus on the matrix: the agricultural land and how the agricultural land-use structure reflects agricultural functions. Within a broader landscape ecological context these two entries should be combined, since the matrix and the network can be seen as complementary parts of the same landscape pattern. Although the network, especially the small biotopes, are mainly a product of agricultural practice, they reflect to a high degree previous functions from an agricultural production point of view, compared with the up-to-date functions of the matrix areas (Brandt, 1991).

The intensification of agriculture supported by the CAP during the 70s and 80s influenced the landscape pattern of many agricultural areas, resulting in the removal of an extensive part of the network (Brandt and Agger, 1988). These changes were made without consideration of the function of the network in industrialised, intensified, agricultural production, thus producing a more open and coarse pattern due to the larger fields and amalgamation of farm units. However, from the end of the 80s this trend changed, since a certain stabilisation in the small biotope pattern could be observed. This stabilisation covers not only a new diversification into both more extensive and at the same time more intensive trends, but also a general decline in the rate of network removal due to a growing importance of the non-agricultural functions of the landscape. Partly this trend can be interpreted as a tendency towards the conservation of the remaining biotopes; partly it reflects the growing recognition of the functional importance of the network, including the establishment of new additional elements in the network. The localisation of these developments, and the resulting

changes in the network as a part of the landscape pattern, cannot be understood within the frame of a static landscape model consisting of matrix, patches and corridors. Rather the developments have to be related to underlying structural aspects such as relief, geology, soil and hydrology, as well as the present land use and ownership structure, as associated with the agricultural system.

When landscape changes are documented and regarded as negative to a certain degree, then public action is requested. This is, naturally, especially true for issues which are already strongly affected by public intervention, as is the case of agricultural landscapes. More profound visions for a better future not directly linked to current problems, have now and then been outlined for the countryside and consequently for agricultural landscapes. The garden-city movement in England and other countries in the beginning of this century is an example of such a vision.

5. Research design and case studies

The classical dilemmas in research design of depth versus breadth, and specificity versus generality, are indeed real trade-offs when studying the relationship between public regulations and agricultural landscape changes.

The best solution is, of course, to try to include all aspects of relevance: to go deep enough in the substance of the research object to be able to explain all major interactions; to be so specific that the processes can be understood as entireties; to have so well-defined data that is possible to generalise to a concrete population. Different sampling techniques can be developed to overcome these problems. Stratified sampling techniques, for instance, can be developed to create samples from which results may be generalised. One major problem with these techniques is that the population/universe must be well-defined: a so-called sampling frame must be available (Vaus, 1986). This is possible for landscape structures that utilise land classifications, and it is possible in agriculture using agricultural statistics, including the AGRIREG database. The problem, however, is that there are no data available to describe the relationships between public regulations, farmers' decisions and landscape change. Such relationships must be studied through case-studies. But this does not mean that the cases can be sampled without any research strategy.

Patton has distinguished between a number of different non-random "purposeful" sampling techniques used to increase the utility of information collected from a few samples (Patton, 1980). Examples of such techniques are presented in table 1.

A more basic argument for a case-study approach is the possibility of studying the processes in their total context, which is a must - according to researchers in favour of case-studies as an approach for studying social phenomena, like Hubert Dreyfus:

"Insofar as the would-be sciences [social sciences modelled after natural sciences] follow the ideal of physical theory, they must predict and explain every-day activities, using ***decontextualised*** *features. But since the context in which human beings pick out the everyday objects and events whose regularities theory attempts to predict is left out in the*

decontextualisation necessary for theory, what human beings pick out as objects and events need not coincide with those elements over which the theory ranges. Therefore predictions, though often correct, will not be reliable. Indeed, these predictions will work only as long as the elements picked out and related by theory happens to coincide with what the human beings falling under the theory pick out and relate in their everyday activities." (Dreyfus, undated - here quoted from Flyvbjerg 1991, p.56).

Table 1. Examples of non-random purposeful sampling techniques (Based on Patton, 1980 p.105).

A.	Extreme or deviant cases. Provides information of unusual cases that is of particular interest, for example outstanding successes of policy implementation (or extreme failures) seen from the point of view of the policy makers as well as the involved farmers.
B.	Typical case sampling. Even though it is not possible to generalise, it may be appropriate to avoid very special situations like very small remote islands, urban fringe areas, mountain areas of extreme altitude etc.
C.	Maximum variation sampling. In order to increase confidence in common patterns across the different cases, for instance similarities in implementing the same policy measure in different member states, a number of different agricultural landscapes and/or different agricultural structures are selected as cases.
D.	Critical case sampling. Some cases permit logical generalisations of the type: if this is true in these cases it is likely to be true in all. Or the opposite: if this policy does not work in these cases there are no reasons to believe it is working in others.

In other words, predictions (in absolute terms) of human actions are not possible because they presuppose that the individuals consider the objects and events as having the same relevance as the theories behind the predictions. This is exactly the case with agricultural landscape changes, if the model presented in figure 1 reflects reality. The farmer may act quiet unpredictably when making decisions about landscape elements on a property, because different types of rationality may be of relevance depending on the context. In fact, the model shown in figure 1 is only applicable to case studies.

Concluding remarks

Even though case studies are necessary in studies of complex social phenomena, like policy implementation and farmers' decision-making about landscape change, this does not mean that case studies may not be linked to the statistical analysis of the CAP and European regions. In fact, case studies may be quite useful in validating the statistical data as well as in generating hypotheses about the spatial effects of the CAP.

References

BALDOCK, D., BEAUFOY, G., BENNETT, G. AND CLARK, J. 1993. *Nature conservation and new directions in the EC Common Agricultural Policy.* Institute for European Environmental Policy, London. 224p.

BRANDT, J., AGGER, P. 1988. The influence of EEC-agricultural policy on the conditions for development of biotope structures in rural landscapes - some Danish experiences. In: K.-F. Schreiber (ed.): *Connectivity in landscape Ecology. Proceedings of the 2nd International Seminar of IALE, Münster 1987.* Münstersche Geographische Arbeiten, 29. Münster. pp. 219-221.

BRANDT, J. 1991. Land use, landscape structure and the dynamics of habitat networks in Danish agricultural landscapes. In: Baudry J., Burel F., Hawrylenko V. (ed.) *EUROMAB: Comparisons of landscape pattern dynamics in European rural areas.* Vol. 1, 1991 seminars. UNESCO. Paris. p. 213-229.

BRANDT, J. 1992. Schafzucht auf den Färöern - zur Gewinnung landschaftsökologischer Informationen durch statistische Analyse eines Landnutzungssystems. *Petermanns Geographische Mitteilungen*, 136, 1992/5 + 6, pp. 235-249.

BRANDT, J. 1995. Ecological networks in Danish planning. *Landschap*, 12 (3). Special Issue on Ecological Networks in Europe. pp. 63-76.

BRANDT, J., PRIMDAHL, J., AND REENBERG, A. 1996: *Rural Land Use and Landscape Dynamics - Analysis of Driving Factors in Space and Time.* Landscape Ecological Papers, n°2. Roskilde University, 24 p.

FLYVBJERG, B. 1991. *Rationalitat og magt. Det konkretes videnskab.* Akademisk Forlag, København. 117 p.

FORMAN, R. T. T., GODRON, M. 1986. *Landscape Ecology.* John Wiley and Son. 619 p.

JONGMAN, R. 1995. Ecological networks as a tool for nature conservation policy in Europe. In: Brandt J., Primdahl. J.(ed) 1995: *Naturbeskyttelse og det almindelige agerland.* Forskningsserien nr. 12 - 1995, Forskningscentret for Skov og Landskab, Hørsholm. pp.5-17.

LANDSCHAP, 1995. *Special Issue on Ecological Networks in Europe.* 12:3, 130 p.

PATTON, M.Q. 1980. *Qualitative Evaluation Methods.* Sage Publications, London. 381 p.

PRIMDAHL, J. 1989. Analyse af planlægningen/planlægning af analysen. *Skriftserie* nr. 39, Institute of Development and Planning, Aalborg University. 29 p.

PRIMDAHL, J. 1994. Landbrug og landskab i to danske landsogne. In: Brandt, J. and Primdahl, J. (ed.): *Marginaljorder og landskabet - marginaliseringsdebatten 10 år efter.* Forskningsserien nr. 6:. Forskningscentret for Skov og Landskab, Hørsholm. pp.51-62.

DE VAUS, D.A. 1986. *Surveys in Social Research.* George Allen & Unwin, London. 254 p.

ZONNEVELD, I. 1995. *Land Ecology.* SPB Academic Publishing, Amsterdam. 199 p.