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Do Public Policy and Regulation Still Matter for Environmental Protection in Agriculture?

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EUROPEAN UNIVERSITY INSTITUTE, FLORENCE

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Printed in Italy in December 1990
European University Institute
Badia Fiesolana
I-50016 San Domenico (FI)
Italy

DO PUBLIC POLICY AND REGULATION STILL MATTER FOR ENVIRONMENTAL PROTECTION IN AGRICULTURE?

by
JOBST CONRAD

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1. Introduction

When studying processes of public policy and regulation in newly evolving policy fields in the 1980s, one frequently comes across the superposition of several paradoxical features. First, the obvious need of a new policy realm to develop some genuine coherent structure and some regulation at all, if intentional policy and not only politics is aspired to, is confronted with a general socio-political climate favouring deregulation. Second, the complexity of new policy fields, which is due to increased (scientific) knowledge and reflexion and to their necessary linkage with and embedding in already established policy areas leading to an overabundance of information and pro and con valuations, seems to require elaborated and precise regulations, whereas past experiences tend to indicate counter-productive results of a multitude of detailed regulations. Third, the subtle general loss of legitimacy of formal institutionalized politics and policies as the natural mode of socially dealing with problems of modern industrialized society implies a growing suspicion of the capability, in principle, of the political system to cope with social problems and the erosion of the trust in public policy and regulation. This process, however, is confronted with a growing need of formal (political) treatment and regulation of social problems because traditionally (better) functioning modes of social self-regulation, i.e. the regulation of affairs by the social actors involved, on the basis of well established social norms

and values suffer from a similar process of delegitimization as social arrangements and procedures to deal with social development and interactions can no longer be taken for granted any longer (see e.g. the increasing break-down of the reliability of norms of social interaction in metropolitan cities).

Environmental policy has developed as a cross-sectional policy during the 1970s in western industrialized countries and met many obstacles to becoming effective and efficient. Environmental policy in agriculture just started to evolve as a policy field of its own during recent years. So, it may be considered an ideal field to study the societal processes which determine if and how public policy in general, and regulation in particular, still matter in newly developing areas. This question certainly refers to the deregulation debate, but is conceived more broadly. It addresses not only the question of public regulation of agricultural activities in order to prevent corresponding environmental pollution but also the one of the value and viability of public policy in general by asking for possible (empirically identifiable) functional equivalents for it.

In order to approach this objective the paper proceeds as follows. First, a historical perspective on public policy and regulation is provided to allow for an appropriate understanding of its development. Second, reference is made to other frequently discussed areas subject to deregulation more recently. Against this historical-empirical background the following three sections deal with the theoretical conceptualisation and the analytical framework for understanding the social role and significance of public policy and regulation by referring to some selected literature on the role of public policy and deregulation. Then, the exemplary case of environmental protection in agriculture is described. Section 7 gives an overview of the socio-political way of thematizing and treating the issue "agriculture and environment", and the following two sections address two specific cases more precisely, namely nitrate pollution and nature conservation. Afterwards, the national similarities and differences of public policy and regulation are pointed out for these two cases. With this empirical knowledge in mind, the analytical framework developed is applied to the social treatment of environmental problems of agriculture with the result that different modes of regulation, deregulation, and re-regulation appear feasible and that functional equivalents of public policy and regulation can be conceived of. After referring this analysis to the deregulation debate, some general conclusions are drawn concerning the question, posed in the title of the paper, ending in the more fundamental question concerning which empirical statements of general interest about public policy and regulation remain still feasible in the end.

2. Historical evolution

Historically, the development of a functionally separate political system which has the capability, the social legitimacy, and the functional primacy to arrive at socially binding decisions and to regulate a growing number of spheres of social relations is a new and fragile phenomenon (Luhmann 1980). Formerly, major parts of social relations were organised and regulated by generally valid social norms and values, and primarily due to other social institutions. For instance, the (catholic) church had considerable power and the socially accepted legitimation to set norms for the mode of social interaction to a considerable degree. Another example points out the significance of industrial self-regulation already one/two centuries ago: it were the self-organised associations like the association of German engineers (VDI) which largely decided about and controlled the safety and quality standards of industrial production and products (Bolenz 1987). So, there is nothing basically new in the recent call for public deregulation and increased (industrial) self-regulation. The ideal of the "Nachtwächterstaat", the non-intervening state which only provides the appropriate regulative boundary conditions for a market-regulated capitalist society is well known to the reader and is constantly present in the continuing "ordnungspolitischen" debates around preferable socioeconomic institutional frameworks (Smith 1937, Eucken 1989).

What has changed in this century is the more broad public recognition of the necessity and legitimacy of at least some public regulation of most spheres of social and industrial life in order to cope as a society with the negative externalities and side-effects of modern capitalist societies in a socially acceptable and reasonable manner. The paradigms of the welfare state, of Keynesianism, and of public planning confirm this trend as they substantially determined public policy in many countries to a considerable degree. Second, with the growing knowledge about and mutual interpenetration of different spheres of social life the perceived capability and necessity to "rationally" regulate them in accordance with the public interest ("Gemeinwohl") became more and more pervasive, as the examples of nuclear energy, environmental protection, or research planning indicate. However, parallel to these developments, the awareness of the limitations of such an approach grew, too. The old scepticism against overall socialist planning and the failure of socialist economies, recently, the disenchantment with technical progress, the limited access to and lacking management capability of processing information for the state (cf. Keck 1984, 1987), and the essential inability of modern societies to deal with their self-generated risks (Perrow 1984, Beck 1986, 1988), all point to the genuine limits to any public policy and regulation. However, as elaborated in the corresponding academic literature, this recognition results in pleading more for better, more flexible arrangements of public regulation, and re-regulation and less for simple deregulation (Hancher/Moran 1989, Majone 1990).

3. Other areas of deregulation

The deregulation debate mostly referred to other areas than environmental policy, namely air traffic control, airline deregulation, financial markets, broadcasting etc. The deregulation of these areas frequently refers to genuine economic concerns such as competition, or failures in markets for information, or uneconomic bureaucratic overregulation. Here, the recognition of and/or the belief in the superiority of market (self-) regulation and the (obvious) disadvantages of intense public regulation is partly hard to dispute. Although under differing ideological angles, there exists considerable consensus meanwhile that at least partial self-regulation by those concerned with and knowledgeable about the field of regulation is preferable over (detailed) regulation by (more distant) public authorities, even if one may advocate parallel regulation as a solution to some regulatory problem fields (Kay/Vickers 1990). But already in the aftermath of the West German debate about the theory of the state (see e.g. Grottian/Murswieck 1974, Habermas 1973, Henning et al. 1974, Offe 1972, Ronge/Schmiege 1973) pointing at the structural preconditions and restrictions of public policy and regulation some left-oriented authors addressed the question of societal self-regulation by capital and labour aside from the state and gave a considerable role to this nongovernmental regulation of industrial relations (see e.g. Ronge 1979, 1980, Jürgens 1980, Conrad 1981). In the meantime, the analysis of quangos (quasi-nongovernmental organisations) has developed into a political science specialty of its own. So, based on a good deal of empirical evidence there is considerable agreement and recognition of the limitations of public regulation and on the existence of non-public functional equivalents for public policy from very diverse political stances. This is, however, not to say that the actual modes of deregulation chosen and developed in practice have already more or less proven to be superior or even viable ways of organising the corresponding spheres of social and economic life. A more differentiated case-specific look is then required to come to empirically valid conclusions about the preferability of different modes of regulating social and economic relations.

In sum, the main conclusions which may be drawn from the current debate on deregulation are the following (cf. Hancher/Moran 1989, Majone 1990):

1. What is actually to be observed is the parallel occurrence of deregulation and re-regulation.

2. The political appeal of deregulation has to do with the growing recognition of trends of ineffectiveness, of overburdening, of overregulation in recent modes of public policy and regulation.¹
3. If there is a divergence of objectives between principal and agent, this divergence will remain whatever (public or private) structures or mechanisms of regulation are put in place." (Kay/Vickers 1990:232)
4. The recognition and political acceptance of functionally equivalent modes of public, private or quango-type regulation have been increasing.
5. The modes of arranging (and regulating) social affairs have become more varied. So, the question rarely is: public regulation, yes or no, but to find a mixture to be preferable for economic, political or social reasons.
6. Intentional attempts by public policy to re-regulate policy domains more efficiently and more effectively by greater reliance on cooperation and self-regulation of the policy addressees can well be observed aside from ideological deregulation campaigns.
7. The political struggles underlying the deregulation debate only partly refer to the substantive claims made by its proponents. They reflect, to a considerable degree, political fights of power, influence and interest consideration, too.

4. The significance of theoretical conceptualisation

As is well known, the way of looking at something and the categories used to describe something significantly influence the analytical conclusions to be drawn. If we study the problems of government and of public policy and regulation in terms of marxist class theory, functional systems theory, or formal decision and game theory matters crucially. Whereas the first perspective may point out the structural restrictions and limitations of any state regulation (Hirsch 1974), the second may emphasize the autopoietic self-reproduction of the political system by treating any external stimulus in the code of politics and thus keeping its functional autonomy (Luhmann 1986), and the third may stress the relevance of mixed motive games for regulatory activities of any government in modern societies (Scharpf 1988). Since none of these perspectives on public regulation can be considered as uniquely necessary, I took no exclusive decision on the theoretical conceptualisation of the problem of public policy and

¹ For example, the conclusions of the Dutch Deregulation Action Programme from 1983 regarding permits in environmental regulation were: "the reduction and simplification of legal rules with regard to business; the reduction of the number of permits; and the streamlining of procedures to a level consistent with what was considered to be socially absolutely necessary. The guiding consideration in all this was that building, expanding and operating of industrial firms should not be made unduly onerous as a result of environmental regulation." (Hanf 1989:198)

regulation and draw on few theoretical approaches judged to provide appropriate insight.

This may be justified by the main objective of the paper, namely to find out in how far *public* policy and regulation matter for a substantive purpose, i.e. environmental protection in agriculture, and this on four levels: do they matter factually (an empirical question), do they matter in the foreseeable future (a prognostic question), are they necessary prerequisites under present socioeconomic conditions (a theoretical question), and what may be their (necessary) functional role aside from substantial environmental protection in agriculture (an analytical question)? The chosen perspective of analysis matters as much as the theoretical approach. Whether public regulation matters or not depends on the interest underlying the investigation. For what does public regulation matter? Is the interest in economic efficiency, in the substance of regulation, in optimal organisation, in detailed planning and control, in weighing the advantages and disadvantages of legal regulation against indirect regulation by market mechanisms, or in strengthening the power and influence of certain social groups and actors? Whereas I look at the role of public policy and regulation as a medium and instrument for such possible purposes on the fourth level of analysis indicated above, my main interest clearly is on the substantive side: do they promote and are they necessarily needed for environmental protection in agriculture? The answer to this question is important for policy conclusions concerning the further development of agro-environmental policy.

A closer look shows that the paper addresses two analytically distinct questions: does *public* regulation matter as opposed to private regulation; and does *regulation* matter as opposed to other modes of social organisation of environmental protection in agriculture? It is one question, how much regulation we need for this substantive purpose, considered here in more general and less case specific terms, and another question, in how far this regulation should be arranged as a public one.

5. Analytical distinctions

After having made clear the substantive and general orientation of the paper several helpful distinctions are pointed out relevant for developing the analytical framework to study the title question of the paper.

These distinctions mainly refer to the issue of regulation versus deregulation, and hardly to the one of public versus private regulation. If not stated otherwise, however, the issue of deregulation is largely identified with public regulation, and its partial substitution by private self-regulation, in accordance with current literature.

Before pinpointing various useful analytical distinctions, it appears appropriate to shortly sketch the background of the current debate on regulation and deregulation.

"The concept of regulation, it has often been noted, is one which eludes precise definition. 'Deregulation' is an even more elusive idea. The problem lies in part in the analytical complexity of the term: like regulation, it can apply to a precise range of policy instruments or legal rules, and it can also be connected to a wider and more diffuse process of system maintenance or disturbance. But analytical complexity is compounded by another consideration. 'Deregulation' was one of the slogans of the 1980s, and privatisation and deregulation will probably remain high on policy agendas well into the next decade. Deregulation is thus not merely an analytical concept. It is also an ideological construct, whose purpose is to allow policy makers the opportunity of legitimising a wide range of activities, many of which do not necessarily correspond to 'deregulation' in its most obvious everyday meaning - the relaxation or abolition of constraining rules." (Hancher/Moran 1989:129) In addition, "as every student of the subject knows, in America regulation is a distinct type of policy-making that has spawned a distinct theoretical and empirical literature; indeed, in economics and political science the study of regulation has been elevated to the status of a subdiscipline (Noll 1985). The situation is different in Europe. Here, despite the intensity of the current debate about deregulation at the national and Community levels, research on the economics and politics of public regulation is still a relatively new area of scholarship." (Majone 1990a:1) The term regulation is often used differently on the two sides of the Atlantic. "In Europe there is a tendency to identify regulation with the whole realm of legislation, governance and social control...By contrast, within the framework of American public policy and administration, regulation has acquired a more specific meaning. It refers to sustained and focused control exercised by a public agency over activities that are generally regarded as desirable to society (Selznick 1985:363)...(This) implies that regulation is not achieved simply by passing a law, but requires detailed knowledge of, and intimate involvement with, the regulated activity...It follows that regulatory policy-making requires, not bureaucratic generalists, but specialized agencies or commissions capable of fact-finding, rule-making, and enforcement. In turn, these differences in meaning reflect significant ideological and institutional differences between the American and European approach to the political control of market processes....(In Europe), even when regulatory instruments like price controls, standard setting or licensing have been used, there has been a general reluctance to rely on specialized, single-purpose agencies...The absence of independent regulatory bodies, the confusion of operation and regulation, the preponderance of informal procedures for rule-making, and the diffuseness of various corporatist arrangements of self-regulation, are all factors that explain the low visibility of regulatory policy-making in Europe, and the consequent lack of sustained scholarly attention...In Europe, as in the United States, traditional structures of regulation and control are breaking down under the pressure of powerful

ideological, technological and economic forces, and are being dismantled or radically transformed. This is often called 'deregulation', but...that is a misleading term...(Often) the important issue is not deregulation but rather...how to achieve the relevant regulatory objectives by less burdensome methods of governmental intervention. In sum, what is observed in practice is never total deregulation, but a combination of deregulation and reregulation." (Majone 1990a:1-3)²

These citations already indicate the necessity to differentiate various dimensions of public regulation and deregulation.

1. "There are two basic means by which a regulator can influence the behaviour of an industry with whose performances he is concerned. She can regulate the structure of the industry of she/he can regulate its behaviour...Examples of structural regulation include: restrictions on entry; statutory monopoly; single capacity rules; rules against individuals supplying professional services without recognized qualifications. Examples of conduct regulation include: measures to guard against anti-competitive behaviour by dominant incumbent firms; price control; rules against advertising and other restrictions on competitive activity...The recent combinations of deregulation with reregulation are less paradoxical if it is remembered that there are these two broad types of regulation. What has happened in several industries recently is a shift of emphasis between structure and conduct regulation (as in financial services), or a policy choice between the two (as with the issue of vertical separation in network industries). The choice is not much about whether to regulate, but about which mode of regulation to adopt...The weakness of conduct regulation is that to be effective it must be concerned with aspects of service provision that are readily measured; and these may be only loosely related to the issues of underlying concern." (Kay/Vickers 1990:233-4)

2. "If deregulation is the mirror image of regulation it should thus mean either: (i) the explicit alteration, amendment or abolition of a set of rules; or (ii) the breakdown of the mechanisms which hold a system at or around a point of equilibrium" (Hancher/Moran 1989:130), i.e. a distinction between (deliberate) changes in the structure and content of rules, and systemic dislocation.^{3,4}

² "In this process deregulation is a kind of regulatory reform, the goal being to make regulation more efficient." (Hancher/Moran 1989:131)

³ e.g. the declining capacity of the airline cartels to specify and to police a stable system of pricing and market sharing in the international market for passenger transport (Cerny 1989).

⁴ "The distinction between the two forms of deregulation may be characterised as a distinction between the active and the passive. Policy makers change rules and the instruments of implementation. But systems also 'get deregulated' - by technological invention, historical crises or economic innovation. As they get deregulated, so existing rules no longer fulfil their original purpose." (Hancher/Moran 1989:132)

3. "Three different kinds of rule change are in practice important: cancellation, substitution and systematisation." (Hancher/Moran 1989:130) This differentiation clearly indicates the possible overlap of deregulation (cancellation) and reregulation (substitution or systematisation).

4. A further distinction refers to rule setting versus rule enforcement. "Much that passes for 'deregulation' is not so much a change in the content of rules, or a departure from regulatory objectives, as an adjustment to the means of enforcement. The state's retreat from a regulatory arena in such instances characteristically involves a shift from implementation by command to implementation via market mechanisms or through negotiation and bargaining." (Hancher/Moran 1989:131)

5. Then, it is important to distinguish different policy levels of regulation with varying scope of their regulatory objectives. Here, the problem of overregulation comes in. What still appears a feasible regulatory approach on the level of regional government, may well be unfeasible on the level of the European Commission. Thus, the Commission itself concluded: "Experience has shown that the alternative of relying on a strategy based totally on harmonization would be over-regulatory, would take a long time to implement, would be inflexible and could stifle innovation." (EC-Commission 1985:18) "The new approach has three key elements: regulation at Community level is to be replaced, whenever possible, by mutual recognition of national regulations and standards; harmonization is to be confined to laying down 'essential health and safety requirements' which will be binding on all Member States; technical specification of these requirements is to be left to European and national standardization organizations." (Majone 1990a:4) However, there are limits of the new approach, and difficulties of implementing it. These make the push by the EC-Commission for centralized single-purpose regulatory agencies, similar to US ones, more probable.⁵

6. "It is a truism that deregulation, like regulation, has a location - a location in space, a location in time and a location in particular economic and political settings." (Hancher/Moran 1989:132) Distinctive national cultural configurations and differing patterns of interest and power according to the respective policy arenas clearly strongly influence the case-specific regulatory setting and deregulation process as situational variables. Consequently, public regulation can be expected to vary from country to country, from area to area, and over time. These variations should allow to draw theoretical conclusions about possible functional equivalents of public regulation, when abstracting from case-specific historical configurations.

⁵ "Hence, regardless of the initial institutional arrangements, something looking very much like a regulatory agency or commission, capable of detailed assessment and rule-making and having an appropriate staff and field offices, is bound to emerge sooner or later." (Majone 1990a:5)

7. Furthermore, the range and scope of a regulatory framework has to be taken into consideration. As far as "the political legitimacy or economic effectiveness of the 'governors' in a wide range of policy areas have been weakened" (Hancher/Moran 1989:136) in general, there are unresolved problems of public regulation at the general macro-level caused by turbulences and overcomplexities of more recent societal development processes and by the gradual disintegration of the prevailing international order. At the meso-level, regulation and deregulation of particular areas or industries in view of technological innovation, changes in market practices, and changing public attitudes have to be reconsidered. And "at the micro-level, changing techniques of monitoring and enforcement offer new possibilities for 'light-touch' implementation of regulatory programmes." (Hancher/Moran 1989:136)

8. If one reviews "the institutions of regulation in a descending hierarchy of state involvement, beginning with nationalization and ending with the internal regulation undertaken by firms themselves" (Kay/Vickers 1990:230), it is well known by now that nationalization does not remove the principal/agent problem⁶: it merely puts it within the context of a particular institutional structure. Thus, again the need to distinguish between the problem of regulation and the one of public or private organisation of regulation is emphasized, as the examples of regulatory inefficiency and regulatory capture signify.

9. As rising complexity and interdependence of causal relations at the level of societal systems result in a growing density of interorganizational networks which makes the sovereignty and identity of participating organizations appear precarious and which is by the way indicated by the observable exchangeability of public and private institutions for the accomplishment of public functions (Streeck 1987), and as public policy has lost its - never unproblematic - capability to neglect distributional conflicts alongside with the growing degree government has given up its prerogative of unilateral hierarchical decision-making and is only able to exercise political control in a texture of bilateral or multilateral agreements (Scharpf 1988:79), both, the necessity of *public* regulation and the feasibility of public *regulation* become precarious and doubtful.⁷ At the same time, modern societies have a never ending supply of 'public tasks', and thus a need for public regulation because of their own grown externalities due to public and private action. In this context, "it is a striking feature of regulatory history that industries are generally

⁶ "A principal/agent problem generally takes the following form. A (the principal) has objectives which can only be achieved by B (the agent), because B has immediate responsibility for the decisions, or better information, or commonly both." (Kay/Vickers 1990:230)

⁷ The discrepancy between formal responsibilities and competences and actual reality of social and political life and decision-making in Italy may serve as an illustrative example in this respect.

opposed both to the introduction of new regulation and to the dismantling of old regulation. Industries dislike the prospect of regulation but frequently find comfortable ways of living with it in practice." (Kay/Vickers 1990:232) As a consequence of these features, the evolution of public regulation is strongly determined by the perceived need of an improved management of growing uncertainties via procedures of meta-regulation, via policy integration relying to more conscious interest coupling, e.g. that effective environmental policy must build on the motivations and world of experience of those whose behaviour is to be regulated. Similar to the partial substitution of management by hierarchical control to management by delegation the practical realization in the deregulation debate is important that successful (environmental) policy is ultimately dependent on the active commitment of the target firms themselves to the objectives sought. (Hanf 1989)

6. Analytical framework

After this sketch of various analytical distinctions relevant for this paper this section outlines the corresponding framework utilized below for the empirical analysis with the following main categories of analysis.

1. In the historical-empirical dimension, I am interested in the historical evolution of environmental regulation in agriculture

- in general and along two specific examples,
- in the four countries analysed, namely D, F, NL and UK,
- with respect to the prevailing pattern of culture, policy style, power and interest relations,
- with respect to the politico-administrative level of regulation (EC, national, regional, local),
- and concerning the similarities and differences across countries and exemplary cases.

2. Referring to the above analytical distinctions, I will distinguish between

- public, private and mixed regulatory activities,
- regulation versus non- and deregulation,
- structure versus conduct regulation,
- changes in regulatory rules versus systemic dislocation,
- rule-making versus rule-enforcement,
- development of a general policy and regulatory framework versus ad-hoc policy-making and regulation.

3. The more theoretically oriented conclusions aspiring to generalization will attempt

- to give reasons for the varying processes of evolving environmental regulation in agriculture,
- to give due account to the different patterns of politics and regulation in agricultural and environmental policy,

- to distinguish between past empirical, probable future and unequivocal theoretical conclusions concerning the significance of public policy and regulation for environmental protection in agriculture,
- to elaborate on the "objective" need and evaluative criteria to publicly regulate environmental protection in agriculture,
- to point out viable functional equivalents for the substantive purpose of environmental protection in agriculture,
- (and perhaps to "speculate" on the structural interrelations of the various determinants of agro-environmental policy and regulation.)

The subsequent sections provide the corresponding evaluative judgements; however, for further details and justification the reader is referred to the corresponding literature (see e.g Conrad 1990, 1991).

7. The historical evolution of 'agriculture and environment' as a socio-political issue

Whereas the subsequent specific case studies are able to delineate the evolution of regulation in practice, tracing the development of the issue of agriculture and environment provides the more general context of public regulation in this field.

Environmental problems of agriculture have become a political issue from about the late 1970s onward. Only since the 1980s policy programs were developed and attempts of public regulation could be observed to protect the environment against agricultural pollution and destruction, partly due to the ongoing processes of intensification, specialisation, mechanisation, rationalisation, internal expansion, growing capital intensity, regional concentration of agricultural production spheres, and shifting of steps of food production into input and food processing industries (see von Meyer 1983, de Haen 1985, SRU 1985). With respect to both the processes of 'economicalisation' of agriculture and agro-environmental policy efforts, differences exist between England, France, West Germany and the Netherlands, with the Netherlands probably most advanced in agro-industrialisation and in agro-environmental regulation. This does not imply, however, a simple correlation between growing environmental threats of modern agriculture, on the one hand, and enhanced environmental protection in agriculture, on the other hand. What can be observed in all countries is the gradual, sequential (often issue-specific) process of public debate and controversy, symbolic policy programs, regulatory rule-making with little enforcement, weakened resistance by agricultural interests alongside the crisis of agricultural policy, and more substantial regulatory efforts in combination with the emphasis on self-regulation.

In order to reasonably understand the evolution of regulation for environmental protection in agriculture, three crucial socio-political boundary conditions have to be borne in mind.

1. The agricultural sector is one with intense public regulation (administered prices, Common Agricultural Policy, market organisations, huge subsidies for agricultural production and goods).
2. Agricultural production by farmers has been perceived at the same time, however, as free entrepreneurship not subject to any public regulation. (Market forces still play a crucial role within regulated agricultural markets.)
3. Whereas agricultural policy largely followed corresponding agricultural interests, the influence of environmental policy on changing agricultural production according to environmental norms has been marginal. The unequal power distribution between environmental and agricultural interests and the structural weakness of environmental policy (Conrad 1988) prevented significant impacts of environmental regulatory efforts in the past.

As a consequence, one observes that public regulation of agriculture is well established and works on the level of agro-economic policy, and is not well established and does not work on the level of agro-environmental policy. This is a clear example how the configuration of politico-economic interests strongly influenced the feasibility and viability of public regulation.

Interestingly, public regulation of agricultural markets mainly occurs on the EC-level, though supplemented but also substantively "replaced" by national and regional agricultural regulation.

Since hardly any environmental regulation of agriculture existed, the debate has not been on deregulation in agro-environmental policy, but on the reliability of moral suasion of and self-regulation by farmers as opposed to public regulation, and on deregulation in agricultural policy, especially advanced by agricultural economists. The agricultural lobby clearly resisted environmentally oriented regulation of agricultural production, whereas the environmental lobby tended to support it. To the extent that environmental regulation of agriculture was finally accepted as necessary because of the systemic dislocation, i.e. increasingly unacceptable environmental hazards of agricultural production, the political fights often concerned the sufficiency of amendments of existing (agricultural policy) rules instead of installing new more systematic agro-environmental regulations.

As far as public regulation as opposed to private self-regulation was considered and realised, it was essentially conduct, and little structural regulation. Since one could not yet speak of an agro-environmental policy in the 1980s, issue-specific ad-hoc regulations prevailed without an overall regulatory framework. Politically the question of rule-making versus enforcement was of secondary importance only because the crucial issue was the admissibility of agro-environmental regulation in general, although this question has generally gained considerable recognition in environmental policy, as pointed out especially by Hanf (1989).

For the future, some deregulation in agricultural policy and some enhanced environmental regulation of agriculture in combination with economic incentives and self-regulation by farmers and advisory services can be expected. This does not yet allow any stringent theoretical conclusions on the available space for functional equivalents and on the "objective" need and criteria for public regulation in favour of environmental protection in agriculture. However, there are not only the argument of empirical development trends but also plausible theoretical reasons for the need of some public agro-environmental policy because without it the substantive goal of at least limiting environmental pollution of agriculture will be hard to be achieved at all.

8. Specific cases: nitrate pollution

Since the detection of the correlation of high nitrate contents of drinking water and the occurrence of methemoglobinemia (Comley 1945) the health risks of nitrate contaminated drinking water were in the center of the academic and political debates about the environmental problems of nitrate, which form only a part of many ecological problems connected with the total nitrogen cycle. Whereas the problem of nitrate pollution was dealt with politically on the water side by setting the appropriate nitrate drinking water standard, which was lowered effectively by the EC drinking water directive from 1980 to 50 mg/l, there was considerable debate till the early 1980s about the causal role of agriculture, mainly high doses of mineral nitrogen fertilizer and large amounts of animal manure, and the undertaking of corresponding preventive measures to avoid the problem of nitrate pollution of ground and drinking water. On the agricultural side, the main emphasis was on information campaigns and appropriate advisory services to reduce nitrate wash-out in agriculture, and only recently restrictions on the amount and time of spreading (liquid) animal manure were imposed by public regulation in some West German states, and a system of charges has been introduced in the Netherlands in 1987 whereby farmers must pay an amount based on the quality of wastes produced above a given quantity according on its phosphate content. Only in water protection zones or in nitrate sensitive areas in England more serious restrictions of agricultural practices are feasible in principle and have been imposed since recent years. In France, general regulatory schemes are available, in principle, to seriously restrict farming practices according to environmental objectives, but they have hardly been applied in the past. Only some requirements of building animal manure storage tanks have been imposed on animal farmers in the Bretagne. In all countries, enforcement control of these quite recent regulatory measures is still weak, except perhaps for the time restrictions of spreading liquid animal manure. Public subsidies for building animal manure storage tanks are given in regions with and without mandatory

regulation of animal manure spreading. The concept of an (environmental) tax on mineral fertilizers has been discussed during the 1980s at many places, but was realised only on a low level in Austria, Finland and Sweden. Concerning excess nitrate concentrations in drinking water, temporary exceptions from the official nitrae standard were frequently admitted.

Altogether, one observes the following features of public policy and regulation in the case of nitrate pollution. The nitrate problem is conceived and dealt with largely as a specific problem. Conduct regulation referred only to the water side in the past, but also to parts of agricultural production more recently. However, the main emphasis on the side of agriculture still essentially is on voluntary self-regulation by the farmers themselves with the partial exception of water protection zones. Enforcement of existing regulations can be assumed in most cases for the drinking water standard, but much less so for regulations concerning agriculture, although gradual improvements can be observed here, too. However, the improvements may be due more to the changing socio-cultural climate in favour of environmental protection imposing social pressure on farmers than to existing explicit regulations. Whereas some "objective" need to regulate nitrate pollution may be derived from its various ecological impacts, this is hardly possible by the specific health risks of nitrate concentrations in drinking water just somewhat above 50 mg/l.

When one includes private agreements between water utilities and local farmers concerning agricultural practices and compensation payments in areas of water extraction, we find public as well as mixed and private regulatory schemes. Clearly, in the case of nitrate pollution, the question is one of regulation or non-regulation, and not one of deregulation. Partly, the new regulations imposed are based on the extension of existing regulations, as the example of liquid animal manure orders in West Germany shows, which are based on the federal waste disposal act.

The probable further increase of nitrate concentrations in drinking water in quite a few, though not in every, areas will tend to enlarge the political pressure for and the enforceability of public regulation of nitrate pollution. Whereas for drinking water standards it is hard to see what kind of non-public functional equivalents would be practically feasible, this question has to be judged differently for the side of agriculture. Here, as the British example seems to indicate, the socio-cultural pressure on farmers to sign voluntary agreements which provide some not very attractive compensation payments for the acceptance of restrictions on their agricultural practices may well lead to similar effects of reduced nitrate wash-out as mandatory regulation in nitrate sensitive areas. So, there are both general reasons for the growing tendency towards publicly regulating nitrate pollution and national and situational reasons for various functionally equivalent treatments of the nitrate problem.

9. Specific cases: nature conservation

Activities towards nature conservation have a long tradition in European countries stemming from about hundred years ago. In the past, the farmer was frequently considered to be a nature conservationist per se opposing the destruction of traditional agricultural landscapes by industrial and urban expansion. Only recently, alongside the dissemination of modern "industrial" agriculture, agriculture was increasingly accused to be a major reason for the loss of natural biotopes and species (see Shoard 1980). Two options became a matter of debate in England, West Germany and the Netherlands in the 1980s: the possible combination of nature conservation and an environmentally compatible agriculture, and the installation of separate nature protection zones by taking land out of conventional agricultural production and allowing at best marginal agricultural land use (see cf. Hampicke 1987). Whereas for the first option public regulation was neither existent nor considered worthwhile in the past, some general legal provisions concerning nature protection zones were available in the past in all four countries and quite a few natural parks and nature protection zones have been established during the last decades, however, with few substantial restrictions on agricultural practices. Recently, some policy programs providing subsidies and advice for modes of agricultural production in line with specific environmental objectives (e.g. environmentally sensitive areas according to article 19 of the EC structural regulation 797/85) have been advanced on the regional, national and EC level, and more rigorous prescriptions are foreseen for newly envisaged nature protection zones. Nature conservation has been an issue of public debate to some degree in England, West Germany and the Netherlands, but hardly in France. Again, one can observe that existing regulation does only matter at all if a corresponding public opinion and a favourable political climate exist.

Apart from a general regulatory framework allowing to pursue in principle a nature protection policy, a lot of actual nature conservation activities have been developed primarily by private organisations, which often were the driving force behind the social promotion of nature conservation objectives. Thus, although a certain legal framework for public structural and conduct regulation of nature conservation can be identified in all four countries it has hardly played any substantial role in the past, except to certify informally established agreements around nature conservation projects. In this case, it is even doubtful to only speak of lacking implementation of existing regulation which was hardly perceived as intended for the purpose of restricting agriculture for nature protection objectives by decision-makers, as the statements in articles 1 and 8 of the (still effective) Nature Protection Act of West Germany of 1976 exemplify, where ordinary agriculture is considered as serving the goals of nature protection by law. So, in contrast to the case of nitrate pollution, public regulation of nature conservation has largely remained

on the level of symbolic policy in the past, and only recently a changing socio-political climate appears to facilitate and to result in some more substantial regulation of nature conservation. But even assuming this process of development, the problem of enforcement and ecological effectiveness will tend to last despite more clear-cut regulation on nature conservation. Behind an image of some public regulation, non-regulation and non-enforcement still dominate in practice.

For nature conservation, some growth of regulation and endeavours towards an overall regulatory framework with attempts to reconcile agricultural and environmental interests, as the Dutch example shows, can be expected. Altogether, the pattern of the social treatment of nature conservation will be and also will be perceived as a (necessary) mixture of public and private regulation and self-organisation so that the question of feasible functional equivalents can reasonably relate only to specific policy arrangements, provisions and instruments, and not to the social organisation of nature conservation in general. A whole set of contextual and situational factors influenced the past development of nature conservation arrangements, and no consistent and persistent nature conservation policy was followed on the substantive level apart from recent developments in the Netherlands. Without further specification of the substantive meaning of nature conservation no stringent theoretical conclusions about public policy and regulation of nature conservation may be deemed feasible.

10. Comparing public policy and regulation between countries

When comparing the four countries with respect to their environmental policy in agriculture in general, one can state on a rather abstract level that the basic problems are the same, that similar principles to deal with these problems tend to evolve, and that below this level few non-specific qualifications are appropriate. In substance, this means that because modern agriculture is increasingly becoming reality the countries experience basically the same threats to the environment, and that the imposition of corresponding environmental restrictions on agriculture is first of all tried on the basis of moral suasion and then of compensation payments.

Environmental problems of agriculture became an issue of public and political debate during the 1970s in the Netherlands, since the late 1970s in West Germany via pollution and food residues due to agrochemicals, and in England via loss of the countryside. In France, agricultural emissions into surface and ground waters were increasingly recognized during the 1980s, but a public agriculture-environment debate was still largely non-existent until 1990. Substantive problem solutions are still feasible in most cases, but they were only taken into political consideration in rare cases and reluctantly. The steps undertaken to limit the problem of nitrate pollution in West Germany and the Netherlands, and the designation of few nature protection areas in England, West Germany and the Nether-

lands are the more or less only non-unique examples of substantive (regulatory) attempts to protect the environment against agricultural destruction in the 1980s.

In substance, the policy pattern in the field of agriculture and the environment gradually and continuously changed towards serious perception instead of denial of the problem, towards more mandatory regulation, and towards compensation payments. Formally, concerning the dominant policy style, the national policy patterns have remained more stable; only the increasing role of politics and regulation on the EC level indicates a significant change. Nowhere the core of established agricultural policy has yet been touched by environmental policy measures. An agro-environmental policy concept has been formulated at best in the Netherlands.

It remains still an open question if agro-environmental policy will develop into a separate (environmental) policy field or be primarily integrated into existing - agricultural and regional - policies. In the past two decades, the picture of environmental policy in agriculture was essentially one of nascent political perception, manifold political bargaining resulting in some countries in a more or less common policy framework, and actual non-policy. The urgency of environmental problems of agriculture on the one hand and the necessary long-term time horizon of their solution on the other hand make it difficult to distinguish prudent from alibi policy orientations, although the latter ones seem to have dominated in the past.

This sketchy overview of the evolution and main features of environmental policy in agriculture in the four countries analysed (see Conrad 1991) provides the background against which the role and significance of public regulation in this field has to be compared among the four countries.

In West Germany and the Netherlands with a legalistic tradition of policy-making more explicit attempts to introduce rules in order to regulate environmental protection in agriculture could be observed than in England and France, although in each country the major emphasis was on moral suasion and voluntary agreements. Public regulation of agricultural production itself - aside from well-known examples of private contract farming - was perceived to contradict the image of the farmer as a free entrepreneur. In no country special single-purpose agencies with appropriate regulatory power were established.⁸ Whereas in England the established tradition of political culture relies more on informal self-regulation on the basis of agreed upon general (legal) rules⁹ than on mandatory in-depth regulation, in France the necessary general legal prescriptions are formally available in most cases but are referred to

⁸ The cases of the British Nature Conservancy Council or the German land consolidation authorities (Flurbereinigungsbehörden) are no substantial counter-examples to this qualification.

⁹ It is not by chance that United Kingdom has no written constitution.

and utilized only under the conditions of a corresponding policy orientation and effective administration. Here, it depends on the respective political climate if existing regulation is applied effectively.

The resistance of the agricultural lobby is against both, *public* intervention and *regulatory* restrictions, in all countries investigated. However, the differences in legalistic tradition may well account for the greater negligence in England and France towards the national implementation of the nitrate standard of the EC drinking water directive. In any case, the EC Commission addressed the European Court of Justice because of lacking implementation of this directive by Great Britain, France and West Germany as well as five other EC member states in 1989, though for different specific reasons. In all countries, the efforts addressing environmental protection in agriculture preferably try to generate and embed public regulation within the existing legal and regulatory framework. The enforcement of (new) agro-environmental regulations has become a matter of political concern only very recently. To a varying degree all countries consider informal self-regulation on the basis of voluntary agreements and compensation payments as a preferable functional equivalent to corresponding public regulation. Only the growing recognition of the serious limitations and weaknesses of these voluntary approaches towards increasing environmental concern in agriculture enhanced the readiness towards at least some public policy and regulation in this respect. Although varying in detail and in the development in time, the general orientation of all countries towards public policy and regulation for environmental protection in agriculture appears to develop into a similar direction on the level of concrete action: some public regulation is considered necessary and unavoidable, but in theory, or at least in practice as a supplement to the voluntary self-commitment of the farmers to guard their environment. Only in environmentally very sensitive areas like water or nature protection zones detailed mandatory regulation and control, too, are meanwhile more or less judged necessary.¹⁰

11. The analytical framework applied: the social treatment of environmental problems of agriculture

In this section, the analytical framework described above is applied more schematically to point out the main features of public policy and regulation for environmental problems in agriculture. Table 1 indicates the corresponding evaluation.

¹⁰ I will not judge, however, in how far these locally restricted regulations serve the purpose to calm the political conscience of the corresponding governments.

Table 1: Regulatory features of agro-environmental policy in four countries

Indicator	Netherlands	West Germany	England	France
Historical evolution	since 1970s formal ones	since 1980s some substance since 1990	since 1980s preference for non-formal regulation	from 1990s? reg. framework available in principle
level of regulation	mainly federal	state and federal	mainly national	national and local/regional
degree of regulation	medium	amendment of a rule-set	mainly non-regulation	low by abstract general reg.
public vs. private reg.	mixed, more public	mainly public	mixed, more private	mainly public, when existent
type of regulation	conduct reg.	conduct reg.	conduct reg.	conduct (and structural) reg.
reasons for reg.	systemic dislocation	rule change	mixed	systemic dislocation
favourable socio-cult. conditions	medium	medium	unfavourable	medium
enforcement of reg.	weak ; strong for NO ₃	weak to medium	weak	weak in the past
regulatory framework	medium since 1990	some	hardly any	available in principle
agricultural policy reg.	yes, but some market orientation	yes	yes, but some market orientation	yes
environment. policy reg.	yes, but weak enforcement	yes, but weak enforcement	formally yes	formally yes

criteria of regulation	legality, consensual problem reg.	legality, conflict regulation	practicality, informal regulation	formality, administrative effectiveness
functional equivalents	voluntary management agreements	quango-regulation, economic incent.	consensual self-regulation	non-policy, local self-regulation
favourable social reasons	public environm. concern	public environm. concern	EC pressure, environm. concern	administrative tradition of regulation
past development	public debate formal (symbolic) reg.	public debate formal (symbolic) reg.	public debate few regulation	administrative debate, crisis management
future development	mixed reg., more substantive reg.	more public + more self-regulation	some more public reg., self-reg.	some more public reg., local agreement
political willingness to regulate	partial	partial	low	partial

Table 1 also summarizes the previous assessment of public regulation for environmental protection in agriculture. For the past, it cannot be stated that public regulation was the favourite way in the countries investigated to cope with environmental problems of agriculture despite the fact that the agricultural sector is a strongly regulated one. Where public regulation gained some ground as in the Netherlands and West Germany, the image is still misleading for the past because this regulation mainly consisted of legal prescriptions with little administrative enforcement and substantive impacts as yet, although this situation may well change in the future. Emphasis was laid on persuasive politics, voluntary management agreements, and local self-regulation by farmers and agricultural bodies. Only concerning human health, some more rigorous regulation via standard setting and control prevails, as the example of nitrate pollution shows. Whereas one can still speak of only little public regulation, the topic 'agriculture and environment' has become an issue for public policy already during the last decade. Only for France this qualification is still somewhat overstated. For the future a mixed picture of more substantive public regulation, reliance on private and quango-type self-regulation, and non-regulatory procedures of limiting agricultural pollution of the environment can be expected to develop further.

For the two specific cases public regulation is no less but partly more developed than in agro-environmental policy in general. Regulatory efforts can be identified on all levels of policy-making from the EC level down to the communal level with the main focus on the national and state level. As far as regulation was established, it was essentially conduct regulation. Frequently, the new regulation was based on the extension and amendment of already existing agricultural or environmental regulations. Functional equivalents to public regulation appear possible and are seriously taken into account by agro-environmental policy. Apart from the increasingly perceived need for regulation, the criteria for introducing regulation differ from country to country, and from region to region.

12. Embedding the assessment in the deregulation debate

This embedding should be done on two levels: the one of environmental policy and the one of the deregulation debate in general.

On the level of environmental policy, the analysis of Hanf (1989) is especially worth-while. He pointed out the following central reflections for Dutch environmental policy:

"The expanding scope and increasing complexity of regulations made it more and more difficult to react quickly and appropriately to new social developments... Where enforcement is uncertain, because its effectiveness is questionable, the integrity of the legal system as such tends to suffer... In addition to various administrative and legal problems

connected with the management of an extensive system of government intervention, economic arguments were advanced to support and justify deregulation... Deregulation was not to be pursued as an end in itself, but rather constituted a critical examination of the ways along which established policy goals were to be sought... The government has made clear from the start that deregulation was not to be equated with the simple abolition of existing rules... In addition to reducing the regulatory burdens of firms, such reforms (of the permitting system) were expected to free time for the environmental authorities for the more complicated and important cases as well as for the enforcement activities which, until then, had been relatively neglected... Only in the last few years has there been growing concern for the monitoring of actual performance and enforcement of compliance with regulations and the conditions of permits... The government has a number of reasons for promoting environmental responsibility within the firm as the institutional basis for an element of self-regulation in its system of management for environmental quality. In the first place, the high demands made on the firm under the present policy regime in connection with a responsible treatment of the environment cannot be met, in the long run, without a well-organized system of environmental management at the level of the firm. Furthermore, such a system of focused responsibility for the implementation of environmental regulations is expected to have important consequences for the nature of the regulatory relations between government and the firm... Instead of developing and applying detailed rules and procedures for ensuring perfect compliance with the letter of the law, government authorities will be concerned with checking on the 'quality' of the internal control systems and the main lines of the firm's environmental policy... Deregulation in the area of environmental policy has not... meant (and will not mean) dismantling of the substantive regulations designed to promote improved environmental quality. When all is said and done, the bottom line of the deregulation efforts with regard to environmental management has been the retention, essentially intact, of the overall regulatory objectives while striving to simplify and streamline existing regulatory procedures and to develop alternatives to the more traditional instruments of regulation." (Hanf 1989:195pp)

Although certainly differing in detail, the general evolution of environmental policy towards more emphasis on self-responsibility and self-regulation of the policy addressees, on substantive enforcement, on streamlining and systematisation, i.e. towards re-regulation appears to be quite similar in Western industrialized countries with a well-established environmental regulatory framework. Therefore, the conclusions of Hanf should be generalizable to a certain degree.

For environmental policy and regulation in agriculture this means that the development trends observed fit well in this regulatory picture of environmental policy in general, although with some time lag and starting more from non-regulation than from over-regulation. The overall aim

only in terms of agricultural interests is partly still to lower the publicly aspired level of protection of environmental quality, but even more to increase the efficiency (and effectiveness) of public agro-environmental regulations, though partially at the price of compensation payments for farmers for not destroying the environment. This similar evolutionary tendency may be concealed by the fact that environmental regulation of many industrial activities is part of a well-established regulatory policy arena in at least some countries since the 1980s, whereas environmental regulation of agriculture is still a newly evolving policy field without a comparable basis of already existing regulatory provisions and institutions.

On the level of the general deregulation debate, the resistance of the agricultural lobby against any regulation positively coincides with the political appeal of deregulation. Nevertheless, as the example of the liquid manure order of Northrhine-Westfalia indicates, the agricultural interests like other industries oppose both the introduction of new, more rigorous regulation and the dismantling of old regulation with which they have found comfortable ways of living in practice (Teherani-Krönner 1987). In substance, there is little correlation between the general debate on deregulation and agro-environmental regulation because in the latter case there is hardly anything to be deregulated, when the first basic regulations of this field are bargained and installed just now, if at all, and because the major economic arguments advanced in favour of deregulating other policy areas do not well apply for a thoroughly regulated agricultural sector, where the agricultural lobby has little interest in deregulation of agricultural markets, which provides it with profitable public subsidies just because of this public regulation of the agricultural sector. So, the embedding of environmental regulation of agriculture in the deregulation debate can only be an ideological one, on the one hand, and one of socio-politico-cultural analysis, on the other hand. As indicated by the title of this paper, my question is not on deregulation but is about how far public policy and regulation do still matter for environmental protection in agriculture.

13. Conclusions

To come back to this central question, the following conclusions summarize the findings of the empirical analysis.

1. Public policy and regulation do matter empirically for environmental protection in agriculture though to a varying degree. They already had some, although limited, substantial impact in this respect.
2. Public policy and regulation do matter for environmental protection in agriculture on the level of historical explanation, too. Without them, one can reasonably argue, the environmental damages of agricultural

production would be almost certainly worse.¹¹ By this statement the possibility in principle of functional equivalents to public regulation is not denied; only their actual evolution during the past decades is more or less excluded on the basis of historical-empirical analysis.

3. Judged in view of the typical time scale and pattern of policy development, the past process of about 20 years of gradual evolution of public and political perception of environmental problems of agriculture, of public controversy and political bargaining, and of designing corresponding policy programs cannot be considered too long. Thus, it could be expected that public policy does now matter in this area, but public regulation hardly yet. However, the latter can be expected to matter in the future though according to the prevailing national policy styles.

4. The picture of the social treatment of a problem field has become a more complex one of public *and* private regulation, of formal political *and* informal self-regulation, and of explicit regulation *and* non-regulatory procedures like market mechanisms for several reasons: the scientific perception of such processes has developed into a more differentiated one with the result of pointing out this always existing variety of such socio-political processes; the limitations of a strict regulatory approach have become more obvious; the reliability of social actors behaving predictably according to certain norms has more and more been dissolved; the uncertainty and unpredictability of future developments, including the unintentional evolution of new policy spaces (Majone 1989), undermines the political significance of assumed causal relationships. Therefore, the mere opposing of public versus private regulation, and of regulation versus deregulation is besides the point.

5. The (objective) increase of the complexity of environmental and of social relational configurations, of ecological hazards to mankind, and of available knowledge about these developments makes some kind of regulatory arrangements to deal with these problems socially rather necessary.

6. The openness and attention towards functional equivalents to traditional modes of public regulation indicates a growing managerial flexibility and a loss of ideological fixation. The question of regulation is increasingly perceived as one of pragmatic optimisation where functionally equivalent options are weighed one against another with respect to their various social, economic, political and cultural implications.

7. Private self-regulation is increasingly advocated as a favourable option, as long as it internalises public objectives, because it tends to have better access to information, better management capabilities, and more

¹¹ This statement does not refer to the well known negative environmental impacts of agricultural policy (Conrad 1990), but only to agro-environmental regulatory efforts.

direct feed-back loops of benefits and losses of the chosen regulatory procedure to the social actors and regulators involved.

8. The cross-national and also cross-sectional variations of agro-environmental regulations together with the considerable cross-national similarities in the basic substantive problem solutions preferred to increase environmental concern in agriculture indicate the flexibility of social arrangements on a concrete level to arrive at basically similar social modes and possibly substantive results of environmental protection in agriculture.

9. The analytical picture of public agro-environmental policy and regulation marks a relatively complex pattern of concrete regulatory features which rarely fit to just one pole of the analytical distinctions made: one finds public, private and mixed regulatory activities, regulation and non-regulation, rule-making and rule-enforcement, etc. Thus, the countries analysed hardly provide proto-type examples of agro-environmental regulation.

10. The main reasons for the varying processes of evolving environmental regulation in agriculture can be attributed to differing national political cultures (policy styles and policy profiles, see Feick/Jann 1989), opportunity structures (Kitschelt 1985) and administrative resources and authority. The interest consideration pattern and the power distribution pattern differ for the political actors involved and concerned for the cases of nitrate pollution and nature conservation; these differences partly explain the observed variations in the public regulation schemes identified.

11. Public policy mattered in the past for environmental protection in agriculture, unlike public regulation. Both will matter in the coming years. Theoretically, the necessity of public policy and regulation in this field can be defended as very likely development paths on empirical grounds, but not derived as unequivocally imperative. Sociologically, they provide a public medium for debate and serve other objectives than the official-formal one of environmental protection in agriculture, too, especially as a forum for the political fight of social actors and institutions to improve their respective power and bargaining position.

12. The traditional categories of policy analysis concerning politico-economic interest relations, institutional arrangements, or policy game and policy cycle are still well applicable to analyse political processes around agro-environmental regulation. Public policy and regulation still provide relevant social channels and media for societal definition, decision and development processes though clearly not the only ones, or in any case the most important ones.

13. The well established public regulation of agricultural markets, farm incomes, and economic agro-structure does in no way guarantee an appropriate public regulation of agro-environmental questions. On the contrary, these dominant patterns of regulation mostly worked to the detriment of environmental policy and regulation in agriculture.

14. The evolution of environmental protection in agriculture supports the hypothesis that the implementation of environmental policy programs is dependent on program alteration and structure formation via problem pressure, persuasion and social learning, and can no longer simply rely on known ways of formal and informal administrative enforcement (Knoepfel 1989).

14. Crucial issues: which empirical statements remain feasible?

When keeping in mind that the relevance of public regulation for environmental protection in agriculture empirically differs from country to country and from case to case, that not an either-or position towards functionally equivalent options for protecting the environment against agricultural pollution but a mixture of various coordinated modes appears preferable in this field, and that contextual variables largely determine the relative advantages and disadvantages of different social procedures to cope with environmental problems of agriculture, then one easily arrives at the final question of this paper: which interesting empirical statements remain feasible.

Certainly, some empirically valid statements can be made concerning influential reasons for the country- and case-specific development path of more public or more private regulation or non-regulation. But when these statements tend to lose any chance for generalizability the only perspective left for sociological analysis remains more or less one of historical interpretation and the generation of meaning (see cf. Bude 1988). For social scientists, however, the claim usually is a more far-reaching one: their empirical analysis should provide insights of more general, and not only case-specific (singular) interest.

I have tried to arrive at corresponding conclusions in that direction in the previous section. Nevertheless, it has to be conceded, that these conclusions remain on a quite abstract and tentative level, let alone possible scientific controversy about their theoretical stringency and methodological validity. It appears doubtful, however, if much more empirically concrete and still rather generalizable statements are really feasible. So, the analysis of the empirical reality of public policy and regulation for environmental protection in agriculture provides us with the main insight of several though not arbitrary ways and possible futures of agro-environmental regulation both on the empirical and on the theoretical level. There are not only substantially better or worse socio-political arrangements of dealing with environmental problems of agriculture which all have some probability of becoming reality, but there are also functionally more or less equivalent social arrangements and procedures to reasonably achieve the substantive goals of environmental protection in agriculture though with mostly differing implications for the various social actors and institutions and for other spheres of social

and political life. What kind of policy oriented conclusions the reader draws from these insights has to be left to his/her own judgement.

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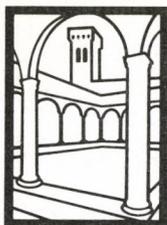
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