



Paper prepared for the 122nd EAAE Seminar
**"EVIDENCE-BASED AGRICULTURAL AND RURAL POLICY MAKING:
METHODOLOGICAL AND EMPIRICAL CHALLENGES OF POLICY
EVALUATION"**

Ancona, February 17-18, 2011



**The question of “evidence” in the emergence of evidence-
based or evidence-aware policies in agriculture**

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Abstract

Evidence-based or evidence-aware policy approaches are used in many different sectors (health, education, etc.). These approaches are less common in agriculture but are gradually emerging. Analysis of debates surrounding this trend sheds light on the particular nature of the difficulties faced by public decision-makers who are willing to use available scientific knowledge. After examining certain misunderstandings which arise in the international debate over evidence-based policy approaches, this paper addresses two specific issues: (i) the problems of competing evidence for using knowledge in the design of public policies and (ii) the potential role of rationalization tools in a possible "depoliticisation" of public decision-making.

Keywords: knowledge, agriculture, policy, evidence

JEL classification: B29 ; D8 ; Q01; O3

1. INTRODUCTION

Evidence-based policy (EBP) approaches derived from evidence-based medicine (Guyatt et al. 1992), aim at promoting the most judicious use possible of available knowledge to inform public deciders (Nutley et al. 2007). Analysis of the conditions surrounding the emergence of these approaches shows how they developed in medicine (Fagot-Largeault 2005) and spread to other areas (Laurent et al. 2009) from education and law to development policies and the protection of natural resources, with the emergence of the concept of evidence-based conservation (Sutherland et al. 2004).

In fact, in many areas of practice, the volume of available information has increased to levels beyond the control of those who wish to use it in the decision-making process. ¹

This assessment has led to several developments.

1. The construction of a "toolbox", intended to facilitate the inventory and use of available knowledge by various categories of users, which includes systematic review methods² which summarise available knowledge to answer practical questions; meta-analyses, methods for evaluating the effectiveness of public action, etc. This new ‘rationalization’ tools complement the array of existing tools (e.g. statistical data).

¹ The consequences of this situation were first observed in medicine. They are serious, as patients and doctors are prevented from accessing updated information about available therapeutic solutions or evaluations of the relative efficiency of these solutions, and ultimately cannot judiciously choose the treatment they deem most appropriate.

² Carried out according to a specific protocol (e.g. methods developed by the Cochrane Foundation).

2. The establishment of collective organizations with specific staff who perform these analyses and update information, manage collective databases, and develop training modules for students and professionals.
3. A contradictory debate on how knowledge, particularly scientific knowledge, is mobilised in decision-making, involving practitioners, scientists, philosophers and others. Much has been written on the subject in English-language publications, but little in other countries like France.

Use of the methods associated with these approaches is uneven across countries but is becoming increasingly important in many areas, as well as in major international institutions such as the World Health Organization and World Bank.

In agriculture, the issue of abounding available information also exists. Environmental concerns develop and lead to new regulations which constraint agricultural practices and land-use planning. This trend raises the issue of the reliability of the knowledge underlying these regulations, particularly when the economic sustainability of farms may be at stake.

In the field of agriculture, the number of studies which take an evidence-based approach is low but is gradually growing. Some mobilize significant resources. One example is the study conducted for the UK's Department for Environment, Food and Rural Affairs (DEFRA) on the impacts of genetically modified organisms (GMOs), which explicitly referred to evidence-based approaches (Ruth, 2003). At the European level, since 2004, the "Standing Committee on Agricultural Research", which advises the European Commission, has called for the coordination and support of evidence-based projects on agricultural issues. At the world level, the recent report on the International Assessment of Agricultural Science and Technology for Development, initiated by the FAO and World Bank (IAASTD, 2008), explicitly supports evidence-based policy approaches. Also noteworthy is the "Regional Strategic Analysis and Knowledge Support System for Southern Africa" (ReSAKSS-SA), a new network which, in the framework of the Southern Africa Development Community (14 countries in Southern Africa), has set a goal of promoting EBP, in particular for policies aimed at increasing agricultural productivity.

This emergence of EBP in agriculture may indicate a willingness to respond to the inadequate consideration of validated empirical scientific knowledge in policy development (CGIAR, 2006). As several authors have pointed out, however, it also raises many questions about the foundations of these approaches and how they are implemented. This paper examines both of these aspects. Discussions on evidence-based approaches may be a heuristic starting point to re-evaluate the quality of evidence available to public decision-makers, including for policy evaluation. But to fully explore this possibility, two pitfalls must be avoided. On the one hand these approaches should not be disqualified by caricaturing them. On the other hand it is necessary to reject any naive apology that would overshadow the contradictions and conflicts of interest that they can exacerbate.

With this in mind, our study is organized around two specific issues: (i) the problems of competing evidence for using knowledge in the design of public policies and (ii) the issue of the potential role of EBP in the "depoliticisation" of public decision-making.

2. SOURCES OF MISUNDERSTANDINGS IN THE INTERNATIONAL DEBATE

Before looking more closely at what evidence-based approaches have brought, it is important to address three sources of misunderstanding in the international debate. The first stems from national differences in the testing of the quality of evidence used in public decision-making; the second is linked to the type of public action to which these tools are related; and the third is linked to the meaning of the English term 'evidence'.

1) Considerable differences exist from country to country in the way knowledge is used to develop, implement and evaluate public policy (Nutley et al. 2010). In English-speaking countries, debate on this process endorses the concerns formulated by Dewey (1927), who emphasized the need to effectively share information by making it available and socially accessible and by ensuring its reliability. Dewey also underscored the importance of viewing this process as a fundamental component of policy development. These concerns are not equally important everywhere. In other cultures, the concept itself of inquiring into the scientific validation of knowledge used in public decision-making is sometimes strongly contested based on the assumption that all knowledge is a social construct shaped by power relations and that analysis should first focus on this issue before any other. In countries where the latter approach is dominant, initiatives aimed at providing public authorities access to validated knowledge are few and far between. Certain concerns which are considered trivial in the UK (the issue of agricultural ministries accessing scientific databases such as Web of Science, for example) are not so trivial in other countries such as France (Laurent *et al.* 2009 a-,b-). As a result, the quality of knowledge which needs to be produced in order to develop and evaluate public policy is not measured in the same way in all countries, as it has been observed in the case of implementation of EU agri-environmental measures (Giraud *et al.* 2008).

2) Secondly, interest in evidence-based approaches should not systematically be seen as a defence of a normative model of political decision-making founded on rational choice theory, to varying degrees in line with the ideal type of "rational comprehensive model" described by Linblom (1959). This ideal type describes a situation in which policy makers i) act according to a series of logical and organised choices, ii) evaluate and compare all possible options, and iii) calculate all economic and political costs and benefits of a public policy. Researchers, decision-makers and other stakeholders work together 'naturally' in this model: they have the time, skills and equipment necessary to access all available information and use it as effectively as possible; it is assumed that action is always taken to reach general welfare, and not to support private interests. However, it has been observed that while this model can be described in theory, it has never existed in practice, except in very limited areas of decision-making on very simple and limited issues.

The situation is therefore more complex. At stake in the debate is the possibility for policy makers to use available knowledge as judiciously as possible, regardless of the importance they intend to give to this knowledge in the decision-making process. Omamo (2004) uses the term 'evidence based practice' to describe the specific means used to facilitate access and the controlled use of available knowledge in public decision-making. He suggests that discussions on some of these practices may refer to different models of public decision-making (e.g. rational model, limited rationality, incremental model). He points out that research based on these different schools of thought points to a need to use evidence-based tools when decision-makers encounter new problems in accessing available knowledge and using it. As S.Nutley (2003) points out, in many cases, the terms 'evidence-informed policy' or 'evidence-aware policy' would more accurately define the scope of these discussions. However, the term 'evidence-based policy' has imposed itself to designate this field of debate, without referring to any particular model of public decision-making.

3) The third source of misunderstanding is the term *evidence* itself, which in English refers to knowledge which presents several essential characteristics:

- This concept reflects the importance of basing action on reliable information (related to the notion of proof),
- It conveys the idea of empirically validated information, knowledge that is founded upon empirical data and corroborated by fact,
- It raises the issue of hierarchy in empirical evidence; all types of knowledge are not considered equivalent; in particular the rules which guide the scientific activity (e.g. clarity of validation procedures) are believed to confer specific epistemic qualities and reliability to the resulting knowledge.

However, in many other languages (latin languages in particular), no single word encompasses all these dimensions (Laurent et al. 2009).

3. THE EVIDENCE ISSUE

3.1. Different levels of evidence

A good deal of the debate on EBP approaches focuses on the ranking of levels of evidence³ from least to most reliable level of evidence. The following table presents a transposition of this system of classification as applied to research tools in the fields of agriculture and the environment. It should be noted that this type of classification also takes into account other non-research based sources of information (individual opinions, practical experience). Certain types of knowledge which are not empirical in nature, for example findings from simulation models, are not directly concerned.

³ Unless otherwise stated, the term "evidence" here systematically refers to empirical evidence.

Table 1. Ranking of levels of empirical evidence from least to most reliable in agriculture and environment fields

<i>Level 1.</i> Opinions of respected authorities, based on practical experience, descriptive studies or expert panels
<i>Level 2.</i> Evidence obtained from historical or geographical comparisons
<i>Level 3.</i> Evidence obtained from cohort studies or controlled case studies
<i>Level 4.</i> Evidence obtained from gathering data on representative situations for hypothesis testing and statistical validation of the robustness of results
<i>Level 5.</i> Evidence obtained through randomised controlled trials

Source: (Laurent et al. 2009-a)

The underlying idea is simple: to implement and evaluate agricultural and environmental measures, public action should preferably rely on knowledge based on evidence of the highest level possible which is not simple opinion or findings drawn from simulation models which only remotely reflect empirical facts (Berriet *et al.* 2011).

It has also been demonstrated that in the practice there is a need to differentiate between types of evidence and evaluate how relevant they are to a specific goal. (i) Evidence of causality establishes that an event is necessary for an outcome (e.g. to provide evidence of the specific mechanism which links an increase fertiliser to an increases of crop yield in controlled conditions, all other things being equal). (ii) Evidence of effectiveness, on the other hand, demonstrates that an action, or series of actions, produces a desired impact whatever the underlying mechanisms (e.g. to provide evidence that an agri-environmental scheme which combines funding and regulatory restrictions and involves a multiplicity of factors had a positive impact on biodiversity indicators). (iii) Evidence of existence demonstrates that a phenomenon has been observed (e.g. to provide biodiversity inventories). Unlike mathematical proofs which decide on the existence of a phenomenon when the mathematical possibility of its existence can be established (e.g. a general equilibrium), in EBP approaches, evidence of existence has an empirical content.

These distinctions are important, as ensuring that the choice of evidence is relevant to the pursued goals: for instance, while evidence of causality is crucial in designing public action programmes, evidence of effectiveness plays a fundamental role in evaluating their impact (Berriet et al. 2011). Thus apparent simplicity of these principles of differentiation should not conceal certain difficulties encountered on both a conceptual (Cartwright 2007) and practical level.

First, when a public decision-maker decides to base a decision on existing knowledge, he or she must assess whether this knowledge is available and what means exist to access it before assessing its quality.

3.2. Availability of knowledge

Methods developed for the systematic identification of available knowledge are being used on an increasingly frequent basis in the fields of agriculture and the environment. This inventory work has revealed some dramatic shortages of knowledge which is supported by high levels of evidence and can be used directly by public decision-makers, particularly in regards to

interactions between agricultural development and environmental protection (Carpenter *et al.*, 2006; Tallis, Kareiva, 2006; Scherr, McNeely 2008). The same applies to evaluations of the impact of agri-environmental measures. Recent studies of the evaluations of agri-environmental measures in France (Vollet *et al.* 2008) and in Europe (Kleijn, Sutherland. 2006) show that they often produce low-level evidence and in some cases even inadequate evidence (where effectiveness is not demonstrated, for example).

Systematic review methods with explicit criteria allow specifying this diagnosis, question by question. In certain cases, they provide an overview of available knowledge which can clarify a decision on a particular point. In other cases, however, this tends to highlight the discrepancy that exists between research and public decision-making. In ecology, for example, studies of the colonisation of favourable habitats by animal and plant species are carried out in disparate empirical conditions: random controlled trials may be carried out at field scale but not at the landscape scale, despite the need for effectiveness at this level to manage biodiversity.⁴ As it stands, in terms of the knowledge available for the development of agri-environmental policies, existing inventories consistently reveal scale discrepancies at two different levels: one on hand between the results of ecological studies (which are often based on small groups of fields) and the scales at which public decision-making intervenes (e.g. in a small region) (Steven *et al.* 2007), and on the other between the scales at which social science and ecological results are produced. These discrepancies make it difficult to integrate knowledge from different disciplines and often prevent it from being used in decision-making.

Furthermore, the theoretical approach used and the discipline involved determine how easy it is to construct high-level evidence. Social science findings must be updated regularly, while natural science findings – even of a probabilistic nature – appear to examine more stable objects and therefore provide more robust results. In agro-environmental studies, this can easily lead to a rejection of knowledge from the social sciences based on the assertion that the levels of evidence provided are lower than in ecology⁵. From this, one can conclude that the impact of a measure on a population of farmers is less conclusive (more difficult to prove) than the impact on the environment. This debate underscores the importance of not favouring *high-level* evidence over *relevant* evidence for the policy under consideration.

4 For this reason, the authors of an assessment study on the effects of agro-environmental measures on bird species concluded: "Whether species are simply redistributing between the available resources by aggregating in fields under agri-environment management and deserting conventional fields (no change in population trend), or experiencing increased breeding success or overwinter survival rate (positive population trend) giving evidence of species recovery, is unknown", Systematic Review 11 - The Effectiveness of Land-Based Schemes (incl. Agri-Environment) at Conserving Farmland Bird Densities within the U.K. (<http://www.cebc.bangor.ac.uk/>)

5 Furthermore, certain techniques cannot be used in the social sciences due to the ethical problems inherent in their implementation. The status given to the "gold method" as a reference method, for example, for findings obtained through randomised controlled trials, is a source of considerable controversy and problems. This issue has been examined in great detail to assess the relative importance of certain findings in the field of development economics which transpose the randomised controlled trial approach to the social sciences (e.g. Banerjee A., Duflo E. 2008).

3.3. Competing evidence: relevance versus levels of evidence

Evidence is relevant to decision-making when it fully corresponds to the phenomenon that is at stake. However, the limits of the phenomenon and the relevance may vary significantly according to the interests, to the institutional and socio-economic context and to the paradigms.

Relevance is a function of the types of stakeholders and their interests. For example, representations of what "agriculture" is depend to a large degree on the sample of farms in the study (and the number of small farms in particular) [for example Eurofarm *versus* FADN statistical universe]]. The perimeters of public actions will differ accordingly. Therefore, those representing rural interests (local authorities), will point out that to fully assess the role of farming in regional development and social cohesion, all farms – even the smallest ones – must be included. Those representing sector-based interests, however, may focus only on farm businesses which produce and sell on a large scale (Laurent, Rémy 1998).

Relevance is also a function of an institutional and socio-economic context and of the issue being examined by the public decision-maker. When scientists in a given discipline work on the same subject (the conservation of biodiversity and the recognition of the multifunctionality of agriculture, for example), at the same time in two similar countries – France and the Netherlands –, it has been observed that they may refer to scientific facts (Fleck, 1981) which are constructed differently despite the existence of a common denomination. Work by Dutch ecologists tends to adapt the issue of land management to major issues of population density and urban pressure. They focus on the development of emblematic species – birds in particular – which are visible representations for urban dwellers of nature conservation, 'in spite of' farming activity. Only the negative effects of this farming activity on biodiversity are analysed (Daniel, Perraud 2009). Alternately, in areas where urban pressure is much lower – in certain regions in France, for example – ecologists study biodiversity conservation mechanisms which are promoted by farming, such as the population dynamics of different categories of insects (Aviron *et al.* 2005). The variables retained to evaluate public support in this field will vary considerably as a result.

Finally, co-existent in all scientific disciplines, the plurality of paradigms causes variations as to which questions are examined and how research objects are constructed, even within comparable contexts. For instance, economic analysis of the management of common goods of high environmental value may rely on approaches based on rational choice theory and conclude that the privatisation of these goods is the only way to prevent their destruction (Hardin, 1968). If, however, institutionalist approaches are used in the same situation, these will underline the instruments used by local institutions which guide collective action (Oström, 1990). Depending on the approach taken, the issues for which reliable knowledge is needed will vary.

Another example can be found in the economic researches considering the necessity to recognize the multifunctionality of agriculture. Approaches based on separate public goods (biodiversity, non-pollution, etc.) will result in actions aiming at rectifying market failures on a case-by-case basis, hence OECD recommendations. Alternatively, approaches based on the

global regulation of farming activity, taking into account the overall reproduction of each category of farm, in particular those with strong social and environmental functions, will not use the same data or the same form of reasoning, and will yield different and non-complementary results for the public decision-making process; hence in this second case France's Agricultural Blue print law (1999)⁶ and stronger recommendations in terms of production and market regulations (Laurent, 2003; Perraud 2003; Trouvé, 2009).

This plurality is not only found in the social sciences. In ecology, action strategies will differ depending on whether an approach is used in which 'habitats' are considered to be homogeneous components of an environment that can be managed independently, or an approach based on landscape ecology that focuses on interaction between components of the environment (Burel, Baudry, 1999).

As S.Nutley points out (2003), it is easy to adopt a cynical view of the perspectives offered by policy that is developed with a greater emphasis on levels of evidence: research rarely provides conclusive answers to policy questions, and strict rationality is rarely at the heart of the policy process. Neither of these conditions is a pre-requisite, however, to the development of policies which are better informed by existing knowledge.

4. FROM KNOWLEDGE TO DECISION-MAKING

In light of these difficulties, Davies and Nutley (2001) have provided elements of a practical response in a three-pronged approach.

- *"First of all we need to develop some agreement as to what constitutes evidence, in what context, for addressing different types of policy/practice questions (...).*
- *It needs to emphasize methodological pluralism, rather than continuing paradigmatic antagonisms; seeking complementary contributions from different research designs rather than epistemological competition.*
- *The many stakeholders within given service areas (e.g. policy makers, research commissioners, research contractors, and service practitioners) will need to come together and seek broad agreement over these issues if research findings are to have wider impact beyond devoted camps"* (p. 87-88).

These three recommendations are intended to facilitate the implementation of EBP-related approaches. They are not, however, a catch-all solution to all issues of competing evidence. They open a new research agenda as the difficulties of actually applying such recommendations vary depending on the country, on available resources, administrative traditions and the position of stakeholders in the process.

Evidence. The first recommendation assumes the possibility of reaching a broad agreement on the nature and validity of relevant evidence of a sufficiently high level for a given

⁶ Loi d'orientation agricole française

issue. But even if such an agreement can evolve, many problems remain as it was showed in the last parts of this paper: (i) firstly, due to an absence or insufficient amount of available observations and evidence; (ii) secondly, because even with shared data, observed or predicted impacts can be evaluated differently. For these reasons, the terms of an agreement on the relevance of evidence and its reliability cannot be assessed in a general manner. EBP approaches help define certain methodological principles (reliable data, a rigorous logical approach) and envision the use of specific tools (such as systematic reviews) for the clarification of positions, although this does not completely resolve the issue of competing evidence. This possible progress, however, requires taking into account the effective - and unequal-capacities of different stakeholders, of different countries, to organize themselves to mobilize the resources needed for this clarification and even to produce the knowledge necessary to defend their interests.

Pluralism. The second recommendation is based on two main principles: on the one hand, the recognition and legitimization of methodological pluralism, to which could be added paradigmatic pluralism; on the other, the possibility of bringing together findings derived from different approaches. Recent studies in the philosophy of science, dealing with scientific pluralism (Keller *et al.* 2006), specify how knowledge obtained from competing theories can sometimes be complementary (once the relevance of the data and the rigour of the analysis upon which it is based has been verified). Evidence-based practice invites researchers to clarify their theoretical viewpoints and to produce meta-knowledge with which to identify intra-disciplinary theoretical diversity and determine the blind spots, contradictions and possible complementarities of different approaches. This co-existence between research approaches is not a simple academic competition. It has a direct impact on the nature of competing references and the policy decision they inform. But once again, the conditions in which competing and/or complementary theoretical approaches may coexist vary greatly depending on national issues and contexts and this recommendation requires a preliminary analysis of the precise articulation between the patterns of the national search regimes (Bonacorsi 2008) with the possible configurations of EBP approaches.

Participation. The third recommendation is centred on participatory approaches that include all those who participate more or less directly in the research process and, occasionally, those working on the ground. Ideally, an agreement which may be reached on the validity of scientific evidence for policy action must include all participants (researchers or otherwise). Doing so entails several risks, in particular that of fuelling conflict between competing evidence as participants hold different positions due to different ideas. Alternatively, an organized governance of decision making may promote the use of the most consensual evidence and omit competing evidence in order to reach an agreement, in which case there is no guarantee that the chosen references are the most scientifically reliable ones. Here again, national cultures of collective action are not equivalent and will endow a same EBP procedure with different meanings according to the context.

In sum, practical recommendations aimed at increasing the use of available knowledge in the formulation of public policy come up against several problems, the nature of which vary depending on the country and the issue at hand. Finally, the use of knowledge can never be dissociated from the conflicting ideas and interest of stakeholders, and as such, these differences must be made explicit. Without this clarification, the agreements reached, either in support of or against EBP approaches, even in international debate, may only be superficial in nature, and may lead to the depoliticisation of debates.

5. EVIDENCE-BASED APPROACHES DEPOLITICISE OR REPOLITISE PUBLIC POLICY?

Comparisons of evidence-based approaches must extend beyond technical considerations regarding methodology and examine the use of these approaches in their proper context.

5.1. Policy instruments, evidence & power stakes

Every government establishes rules and systems through which to access the knowledge it needs to meet its objectives (monitoring and statistical tools, funding for research, etc.) Since ancient times, States have relied on tools such as the population census, which, as we know, brings into play both evidence and power stakes (Desrosières 2008). While analysis may occasionally focus on one of these two dimensions, a clear understanding of the role played by these tools in policy development always requires that this duality be kept in mind. Evidence-based methods must be analysed from this twofold perspective.

Among other things, a public policy is shaped by the status given to knowledge that is integrated into public policy instruments⁷. To establish an environmental protection zone, for example, policy makers may choose to give precedence to analysis based on population census, natural resources surveys, etc. or on the contrary, they may choose to rely on a participatory mapping, where various stakeholders and local authorities delimit an area according to their own knowledge and interests. Stakes to be considered will differ depending on which of these instruments takes precedence.

5.2. EBP and risks of depoliticisation

As with any type of public policy tool, methods based on evidence-based approaches may carry a risk of depoliticisation. In this situation, power stakes of the policy instruments are overshadowed. The use of such a policy instrument can conceal what is truly at stake in a policy debate, behind the debate on evidence, in different ways: the channelling of political debates through procedures or categorisations which are considered 'natural'; or the rejection of any action which does not match with the dominant power structure, by mobilising *ad hoc* scientific

⁷ Public policy instrument as defined by Lascoumes and Le Galès (2007): "A public policy instrument constitutes a device that is both technical and social, that organizes specific social relations between the state and those it is addressed to, according to the representations and meanings it carries. It is a particular type of institution, a technical device with the generic purpose of carrying a concrete concept of the politics / society relationship and sustained by a concept of regulation", p.4.

knowledge as a means of bypassing policy debate by invoking the superiority of high-level evidence⁸ in all cases.

However, as examples of competing evidence show, even when different stakeholders seek out validated knowledge, they have a specific preference for certain kinds of instruments and fields of knowledge. Each stakeholder tends to refer to the disciplines that are best suited to provide answers to its specific questions⁹. Lastly, in its most extreme form, a "connivance" effect may be observed, where an inquiry is guided by the doctrinal choices of the researchers themselves and tends to provide evidence which supports the position of a group of stakeholders (Fouilleux, 2003; Selmi 2006). Public decision-making may therefore lean towards instruments which produce the representations that best adhere to the government principles underlying it.

It is therefore necessary to develop a new generation of work which examines the government principles and the power relations which may underlie the analytical framework and tools used in evidence-based approaches. These may have significant effects on the structure of public decision-making in the fields of agriculture and the environment. As shown by Sutherland *et al.* (2006) for biodiversity conservation policies, EBP methods are efficient to answer simple accurate questions but they can provide only limited help for dealing with the multifactor issues met by policy makers. Therefore, adopting more 'evidence-based' approaches can help reinforce initiatives that use a fractioned approach to public action (one goal, one tool, according to Tinbergen). As highlighted in the IAASTD-1 report (2008), however, contemporary challenges imply to combine goals which are closely connected (agricultural development, reducing poverty and hunger, improving human health and the environment). Development policies which do not address this global dimension can result in new contradictions. In their review of the outcomes of "pro-poor conservation" development programmes, Adams *et al.* (2004) point out that far from being a win-win process, biodiversity conservation programmes often have a negative impact on poverty reduction and farming development. When these goals are examined independently, as is the case with the UN Millennium Development Goals (UN, 2000), any existing contradictions are masked; the issue of ranking evidence is substantially toned down and supports a consensual display of shared goals; evaluation becomes considerably easier if interactions between goals are not examined. For this reason there may be a specific affinity between the promotion of evidence-based approach methods and a strategy of smoothing out contradiction which may invoke the necessity to rely on scientifically established knowledge to legitimate a compartmentalisation of policy goals,

Such affinities need to be spelled out..

⁸ In this regard, in the United Kingdom, widespread reference to the notion of evidence-based policy in New Labour speeches on modernisation policies in the late 1990s sometimes was exaggerated to the point of becoming farcical. Several observers criticised the manner in which the argument for evidence was used as an authoritative truth to disqualify any alternate viewpoint despite the fact that the validity of the 'evidence' in question had not been independently examined. Worse, there was no 'evidence' behind certain speeches presented as being 'evidence-based'.

⁹farmers' representatives, for example, tend to refer to social and economic analysis while environmental lobbies refer to data sourced in the natural sciences sector (e.g. Laurent *et al.* 2009-b)

5.3. Depoliticisation or repoliticisation ?

Study of the depoliticising effects of evidence-based approaches raises another question: what depoliticising effects occur when these approaches are rejected?

Globally, examination and analysis of agricultural and environmental literature reveals that the appropriation of evidence-based approaches or of tools supposedly based on the philosophy underlying the development of these approaches has not been very widespread; to the contrary, there is a lack of tools for a shared, critical study of available evidence and evidence which is used. Evidence-based approach methods are not often mobilised, even for simple purposes (systematic reviews, shared evaluation criteria for evaluating levels of evidence, etc.)

One can wonder, then, whether resistance to evidence-based approaches is not attributable to the intrinsically subversive nature of its requirement for clarification. If what is at stake is the fear of seeing the role of evidence reinforced, or, to the contrary, of seeing it better clarified.

- What are the political implications of rejecting the debate on the reliability of available evidence when, on a de facto basis, the prescriptive technical content of regulatory action is actually increasing?
- Similarly, what are the political implications of choosing not to make available knowledge more accessible and transparent to all social groups (via ad hoc tools), where that choice is not intended to reduce the incommensurability of the evidence provided by different stakeholders and when stakeholders have very unequal means to access and produce knowledge?

These questions remain open for the time being. They solicit further analysis of the development of evidence-based approaches in the fields of agriculture and the environment, they also suggest that an informed use of these approaches may also contribute to repoliticising debates.

6. CONCLUSION

Research and tools built on evidence-based approaches can be interpreted and used in many ways. Sometimes they are used to support normative and dogmatic positions or to promote a simplified method of decision-making in which the results of scientific research are presented as authoritative arguments. However, researchers should not develop a naïve vision of policy making process. Policy makers are not deluding themselves with the illusion that scientific evidence will simplify the decision-making process or, to the contrary, that it is always possible to ignore the indications on the state of the world that they provide. The decision-maker's role is to choose; not only between competing forms of scientific evidence but also between types of knowledge on the basis of relevancy and between constraints and goals. Even clear and validated scientific evidence is not enough to legitimise a given decision taken without more general political reflection.

This is not a reason, however, not to better inform policies with evidence. An agreement on the evaluation of evidence can only be reached on the basis of specific research efforts which review all rigorously established results on a given issue. The debate surrounding EBP approaches can inspire methods that provide all policy stakeholders with overall information about available knowledge and its level of empirical validity. Accomplishing this requires that attention be focused at an earlier stage on the production of meta-knowledge that allows the different stakeholders involved in policy making to navigate the world of existing knowledge (e.g. shared systematic review). This also implies that, upstream, public authorities provide specific resources for the equipment (documentation teams, specialised engineers, etc.) needed for this production.

In agricultural and environmental policy, the transposition of these considerations highlights three sensitive aspects of the current situation. (i) The use of systematic inventories of available knowledge reveal significant knowledge gaps on issues that are fundamental to developing, implementing and evaluating agricultural and agri-environmental policies (e.g. a lack of information on interactions between social and bio-technical processes). (ii) Systematically conducted studies show that certain stakeholders have only partial and fragmented access to the sphere of available knowledge (Laurent *et al.* 2009). (iii) They also show the huge differences of the status of evidence in the policy making process according to countries.

The generalisation of practices using methods inspired by evidence-based approaches and the increasing presence of references to scientific evidence in agricultural and environmental regulation indicates a need to examine in greater detail the pros and cons of these approaches. Doing so requires placing 'evidence' in its proper place as one (but not the only) factor in policy making; developing methods which show decision-makers precisely how evidence is produced and which are its conditions of validity (meta-analyses, ad hoc reviews of assessments and of available data, etc.), and providing scientists and decision-makers with interactive and rigorous forms of access to knowledge. In other words, while it is important to remember that public policy instruments always entail power stakes, it is also necessary to further investigate the issue of access to knowledge and evidence and the evaluation of its reliability.

ACKNOWLEDGMENTS

This paper is based on research funded by the French National Research Agency (ANR) (Ebp-BioSoc and BipBop programs). Our thoughts go to Daniel Perraud, who was very much involved in the debates that led to the writing of this text. We also thank Jacques Baudry and Renato Maluf for their comments on an earlier version.

REFERENCES

- Adams W.M., Avelling R., Brockington D., Dickson B., Elliot J., Hutton J., Roe D., Vira B., Wolmer W. (2004). Biodiversity conservation and the eradication of poverty. *Science*. 306, 1147-1149
- Aviron S., Burel F., Baudry J., Schermann (2005). Carabid assemblage in agricultural landscapes : impact of habitat features, landscape context at different spatial scales and farming intensity. *Agriculture, Ecosystems, Environment*, n° 108-3, p. 205-217.
- Banerjee A., Duflo E. (2008). *The Experimental Approach to Development Economics* NBER working paper No. 14467 41 p.

*Ancona - 122nd EAAE Seminar
"Evidence-Based Agricultural and Rural Policy Making"*

- Berriet-Sollic M., Labarthe P., Laurent C. Baudry J. (2011). *Empirical validity of the evaluation of public policies: models of evaluation and quality of evidence. Paper for the 122nd EAAE Seminar "Evidence-based agricultural and rural policy making; methodological and empirical challenges of policy evaluation"* Ancona, February 17-18, 2011
- Bonaccorsi, A., 2008. Search regimes and the industrial dynamics of science, *Miverva*, 285-315
- Burel F., Baudry J., (1999). *Ecologie du paysage : concepts, méthodes et applications*. Paris, Lavoisier.
- Carpenter S., DeFries R., Dietz T., Mooney H., Polasky S., Reids W., Scholes R. (2006). Millennium Ecosystem assessment : research needs. *Science*, vol. 314, p. 257-258.
- Cartwright N. (2007). *Evidence-based policy: where is our theory of evidence?* Technical Report 07/07 (ISSN 1750-7952 Print, ISSN 1750-7960 Online) by the Contingency And Dissent in Science Project, Centre for Philosophy of Natural and Social Science, The London School of Economics and Political Science, UK. 18 p.
- CGIAR Science Council, (2006), *Impact Assessment of Policy-Oriented Research in the CGIAR: A Scoping Study Report*, Science Council Secretariat, Rome, Italy.
- Daniel, F.-J., Perraud D. (2009), Multifunctionality of agriculture and contractual policies. A comparative analysis of France and the Netherlands, *Journal of Environmental Management*. Vol. 90, Supplement 2, pp S132-S138.
- Davies H., Nutley S., (2001), *Evidence-based policy and practice: moving from rhetoric to reality*, 3rd International, Inter-disciplinary Evidence-Based Policies and Indicator Systems Conference, pp. 86- 95.
- Desrosières A. (2008). La statistique, outil de gouvernement et outil de preuve. in Desrosière. *Pour une sociologie historique de la quantification*. Mines/ Paris tech. p.7-19
- Fagot-Largeault A., (2005) Evidence-based medicine: its history and philosophy', in: *Logic, Methodology and Philosophy of Science*. Proceedings of the Twelfth International Congress, Petr Hájek, Luis Valdés-Villanueva, Dag Westerståhl, editors, London: King's College Publications
- Fleck, L., (1981). *Genesis and Development of a Scientific Fact*, The University of Chicago Press, .203 p.
- Fouilleux, E. (2003), *La PAC et ses réformes. Une politique à l'épreuve de la globalisation*, L'Harmattan, Paris.
- Giraud C., Laurent C., Ricroch A., Allsopp N., Bonnafous P., Carneiro M.-J., Matose F. (Dir.). (2008). *Difficultés d'accès aux connaissances scientifiques pour les décideurs publics chargés de concevoir les contenus techniques de mesures réglementaires mettant en jeu agriculture et préservation de la biodiversité*. Rapport EBP BIOSOC - Ensemble de travaux n°1. Résultats des enquêtes réalisées en France, au Brésil et en Afrique du Sud. Paris : INRA-SAD. 79 p. + annexes
- Guyat *et al.*, (1992). The evidence based medicine group. "Evidence based medicine. A new approach to teaching the practice of medicine. *JAMA*, nov 4, 268,(17), 2420-2425
- Hardin G. (1968). The Tragedy of the Commons. *Science*. 162 : 1243-1248
- Hodgson G.M., (1998), The Approach of Institutional Economics, *Journal of Economic Literature*, vol. 36, p. 166-192.
- IAASTD -1 (International Assessment of Agricultural knowledge, Science and Technology for Development), (2008). *Agriculture at a cross road. Global report*. Island Press. 588 p. .
- IAASTD -2 (International Assessment of Agricultural knowledge, Science and Technology for Development), (2008). *Évaluation internationale des connaissances, des sciences et des technologies agricoles pour le développement (IAASTD) Résumé général à l'intention des décideurs*. 48 p.
- Kleinj D., Sutherland W. (2003). W. How effective are European agri-environment schemes in conserving and promoting biodiversity? *Journal of Applied Ecology*, 40 : 947-969
- Lascoumes P., Le Galès P. (2007). Understanding Public Policy through Its Instruments. From the Nature of Instruments to the Sociology of Public Policy Instrumentation. Governance. *An International Journal of Policy, Administration and Institutions*, Vol.20, 1, p. 1-21.
- Laurent C., (2003), Le débat scientifique sur la reconnaissance de l'activité agricole et sa reconnaissance par les politiques publiques, In *La multifonctionnalité de l'activité agricole et sa reconnaissance par les politiques publiques*, Educagri Editions, p. 253-270.
- Laurent C., Baudry J., Berriet Sollic M., Kirsch M., Perraud D., Tinel B., Trouvé A., N.Allsopp, Bonnafous P., Burel F., Carneiro M.-J ., Giraud, Labarthe P., Matose F., Ricroch A. (2009-a). Pourquoi s'intéresser à la notion d'Evidence-based policy ? *Revue Tiers-monde*, n°200, 853-873
- Laurent C., Labarthe P., Trouvé A., Berriet-Sollic M., Bonnafous P. (2009 -b). *Les connaissances scientifiques, une ressource de plus en plus rare pour la décision publique ?* Communication au Forum de la régulation, Paris 1-2 décembre 2009. 17 p.
- Laurent C., Rémy J. (1998). Agricultural holdings : hindsight and foresight. *Etudes et Recherches sur les Systèmes Agraires et le Développement*. n°31, pp. 415-430
- Lindblom C., (1959), The science of « Muddling through ». *Public administration review*, Vol 19: 2, 79-88.
- Nutley.S. (2003). "Bridging the policy/ research divide. Reflections and Lessons from the UK". Keynote paper. Facing the Future: Engaging stakeholders and citizens in developing public policy. NIG Conference. Canberra. 20p.
- Nutley S., Walter I., Davies H. 2007. *Using Evidence. How research can inform public services*. Policy press. University of Bristol. 363 p.
- Nutley S. Morton S., Jung T., Boaz A., (2010) Evidence and policy in six European countries: diverse approaches and common challenges. *Evidence and Policy*. Vol 6, 2, 131-144
- Omamo S.W. (2004). *Bridging research policy and practice in African agriculture*, DGSD Discussion paper, IFPRI.

Ancona - 122nd EAAE Seminar
"Evidence-Based Agricultural and Rural Policy Making"

- Ostrom, E., (1990). *Governing the Commons: The Evolution of Institutions for Collective Action*. Cambridge University Press, New York.
- Perraud D., (2003). Les ambiguïtés de la multifonctionnalité de l'agriculture. *Economie Rurale*, Vol.273, n°273-274, 45-60
- Ruth L., (2003), *GM crops and food. Evidence, policy and practice in the UK: a case study*, Working Paper n° 20, ESRC UK Centre for Evidence Based Policy and Practice,
- Scherr S., McNeely J. (2008). Biodiversity conservation and agricultural sustainability: towards a new paradigm of 'ecoagriculture' landscapes. *Phil. Trans. R. Soc. B* 2008 363, 477-494
- Selmi A. (2006). *Administrer la nature*. Edition de la maison des sciences de l'homme.485 p.
- Stevens C., Fraser, I, Mitchley J., Thomas M. (2007). Making ecological science policy-relevant: issues of scale and disciplinary integration. *Landscape Ecology*. 799-809.
- Sutherland *et al.*, (2006), The identification of 100 ecological questions of high policy relevance in the UK, *Journal of Applied Ecology*, Août 2006, n° 43(4), pp.617-2.
- Sutherland W., Pullin A., Dolman P., Knight T. (2004). The need for evidence-based conservation, *TRENDS in Ecology and Evolution* Vol.19 N°.6, 305-308
- Tallis H., Kareiva P., (2006). Shaping global environmental decisions using socio-ecological models. *TRENDS in Ecology and Evolution*. vol 21, n°10, p.562-568.
- Trouvé A., (2009). Les régions, porteuses de nouveaux compromis pour l'agriculture, *Revue de la régulation*, n°5, <http://regulation.revues.org/index7550.html>
- UN, (2000). United Nations Millennium Declaration. 9 p.
- Vollet D., B. Hautdidier, J. Subervie, S. Lafon, G. Amon, G. Bigot, N. Turpin, A. Trouvé, A. Gassiat, F. Zahm, and S. Chabé Ferret (2008) Expertise des méthodes utilisées pour évaluer l'impact des dispositifs de soutien publics à l'agro-environnement. in. Chabé-Ferret S., Gassiat A., Subervie J., Zahm F.. *Assistance méthodologique à la préparation de l'évaluation ex-post du PDRN 2000-2006 en matière de soutien à l'agroenvironnement : rapport final de synthèse*. Département : GT ATR - TR : RURAMEN / CERES