

Incentive Policies for Biodiversity Conservation and Protection in France: current practices and trends

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Based on a study funded by the French Ministry of the Environment (Ministère de l'Écologie et du Développement Durable), this paper, reviews the various way followed by incentive policies in favour of biodiversity in France.

In order to protect and preserve biological diversity, public authorities can use a broad panel of actions according to the objectives they set, the practices they want to alter, the ecosystems or species they are willing to protect and the timescales they choose. French political powers used to create rules to regulate available natural resources' utilizations considering that direct regulation is a prompt and effective way to protect ecosystems as well as species. In the Nineties a strong development of the use of incentive mechanisms was observed, in particular with the implementation of the Agri-Environmental Measures in Europe and Territorial Contracts of Exploitation in France. Such incentive measures allow reducing effects of market imperfections (externalities and other issues related to public goods) that diminish the protection of biodiversity that would otherwise be used in unsustainable ways.

About seventy policy measures have been identified and characterized. They are presented here following a typology according to their nature (dissuasive taxes, incentive taxes, subsidies and loans with preferential rates, allowances and permits, contracts, institutions building, formation and information dissemination mechanisms) and their impacts, directs or not, on biodiversity. An analysis of the results is carried out in terms of relative weight and effectiveness and we try to identify trends in French biodiversity conservation policies.

Keywords: biodiversity conservation, incentive policies, France

JEL codes: H23, Q28

Introduction

Despite an apparently clear and simple definition, the notion of biodiversity remains complex and may be ambiguously perceived. Its measurement and any quantitative approach are difficult and maybe impossible as soon as it has to be the referent for the evaluation of the efficiency of conservation policies. The confusion between biodiversity environmental policies protection is thus to some extent unavoidable.

As shown by OECD's reports, public authorities have at their disposal a broad panel of means to protect biodiversity according to the objectives they set, the practices they want to alter, the ecosystems or species they are willing to protect and the timescales they choose. These tools can be practically classified into four main categories: regulations, purchase of lands by the State in order to create protected areas, ex-situ conservation and incentive measures.

The regulation of the resources uses is considered as a fast and apparently simple way to protect ecosystems and species. Thus it is still the mainstream approach, even if in the nineties a strong development of the use of incentive mechanisms was observed in particular with the implementation of Agri-environmental Measures by the European Commission (EC) (Mesures Agri-Environnementales - MAE) and Territorial Contracts of Exploitation (Contrats Territoriaux d'Exploitation - CTE) by the French Ministry of the Agriculture (Ministère de l'Agriculture, de l'Alimentation, de la Pêche et des Affaires Rurales - MAAPAR).

Incentive measures are aimed at correcting markets imperfections (externalities and other imperfections related to public goods characteristics such as free-riding) that diminish the protection of biodiversity that would otherwise be used in unsustainable ways. Thus they make it possible to protect biodiversity by ways economically more efficient than regulations, taking into account the interests of actors and introducing flexibility (they facilitate the adaptation of the evaluation of conservation to landscapes, surfaces, actors...).

These papers presents the main results of a study achieved in the first term 2003 (Rulleau, Rutagungira, Motte, Salles) and funded by the French Ministry of the Environment (Ministère de l'Ecologie et du Développement Durable - MEDD). The objective of this study was mainly to set up a systematic inventory of all incentives that aim to promote agents' behaviours in favour of biodiversity components (at the level of genes, species or ecosystems) conservation and sustainable use. Incentive measures are then considered in a broad sense, all measures other than command-and-control regulations are actually considered.

The paper is organised in two parts. In the first one the main indexed measures are listed, following categories slightly modified from OECD (1996), and briefly commented. In the second part, the sources and a few causes of the wide existing measure diversity is analysed and tentatively explained.

1. Why using incentive measures?

The Convention on Biological Diversity (CBD) states in its article 11 that “*each Contracting Party shall, as far as possible and as appropriate, adopt economically and socially sound measures that act as incentives for the conservation and sustainable use of components of biological diversity*”.¹

OECD defines economic incentives as all measures using the price system and market forces to achieve a goal (OECD, 1996). Basically, they are supposed to act so that biological diversity becomes for related agents an asset and not a burden (OECD, 1994). Then, they aim to alter agent’s behaviours and make them better respect biodiversity: they try to internalise positive externalities, by remunerating services provided to the society by agents who protect biodiversity (if it has a value for the others) but also negative externalities by imposing costs to agents who destroy biodiversity and its public good dimension. In that way they sanction agents’ behaviours that have perverse effects on biodiversity, encourage and support virtuous economic activities and virtuous behaviours, set up connections between stakeholders and between institutions and citizens in order to reinforce coordination and information dissemination or help financially and/or technically the realization of projects in favour of biodiversity conservation and protection.

Actually, incentive measures are often rather traditional economic tools (such as taxes, subsidies...). The OECD, in harmony with CBD’s works, usually adjoins some socio-institutional instruments (information dissemination, incentives for stakeholders involvement, institution building, formation...) that can influence agent’s behaviours.

1.1. The various types of incentives in French biodiversity policies

Nine groups of incentive measures can be distinguished: dissuasive taxes, tax advantages, subsidies and loans with preferential rates, allowances and permits, contracts, measures of economic support, institution building, formation and information diffusion². The following table shows all economic incentives we indexed according to these main categories and their

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¹ At the beginning of 2002 the Conference of the Parties encouraged once more the States to re-examine their legislation and policies in order to identify and promote incentives in favour of biodiversity (IUCN, 2002).

² Contrary to OECD framework, sanctions will not be considered as economic incentives since, in France, they are only used to punish the non-observance of regulations. Moreover, the question of environmental liability is still under discussion. French legislation does not make possible to note damage if the complainant cannot be identified, plaintiffs must create an association of citizen dedicated to protection. “Environmental damage” does not exist in France in the same way as in Anglo-Saxon or Northern Europe countries (in Norway for example there is a total responsibility for hydrocarbons pollutions). However this question being more and more discussed at the European level (“White Paper on environmental liability“ of 9 February 2000 for instance), France will doubtless in the near future be obliged to revise its legislation and to introduce this new concept, opening the way to the creation of incentive sanctions in favour of biodiversity.

institutional origin (EC, MEDD, MAAPAR, other Ministries, Regional Councils, Departmental Councils, Town Councils or other institutions).

Table 1. Number of incentive measures indexed for each type

INCENTIVE MEASURES	INSTITUTIONAL ORIGIN		TOTAL
Dissuasive and incentive taxes	Others Ministries	1	6
	Departmental Councils	3	
	Other institutions	2	
Tax advantages	Ministry of the Environment	3	8
	Ministry of the Agriculture	4	
	Other Ministries	1	
Subsidies and loans with preferential rates	European Commission	4	23
	Ministry of the Environment	4	
	Ministry of the Agriculture	6	
	Other Ministries	1	
	Regional Councils	3	
	Departmental Councils	2	
	Town Councils	1	
Other institutions	2		
Allowances and permits	Town Councils	1	1
Contracts	European Commission	2	21
	Ministry of the Environment	2	
	Ministry of the Agriculture	7	
	Other Ministries	2	
	Regional Councils	1	
	Other institutions	7	
Measures of economic support	European Commission	4	4
Institution building	Ministry of the Environment	4	7
	Ministry of the Agriculture	1	
	Regional Councils	2	
Formation	European Commission	1	3
	Ministry of the Agriculture	2	
Information provision	Ministry of the Agriculture	3	3

1.1.1. Dissuasive taxes

Three main dissuasive tax measures can be distinguished: environmental taxes, environmental charges and performance bonds³. There also exist pure financing taxes whose objective is to provide environmental funds, and whose incentive capacity relates to the subsidies that would be granted with the money collected.

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³ According to OECD (1999), performance bonds are only used in Australia exclusively for water management.

In France, dissuasive taxes are used mainly in the water sector– if any. They aim to limit pollutions, especially from cities and industries (pollution charges), and reduce water consumption (charges for water withdrawal). In application of the polluter-pays principle, the objective is to make people disturbing or degrading aquatic ecosystems pay for their rehabilitation. The products of the charges are redistributed in the form of financial assistance.

In spite of their significant contribution in many pollutions of water tables and rivers farmers are still little affected by these measures, even if the MEDD pretend to involve them more in the future through the creation of a tax on nitrate's utilization. But the efficiency of such measures remains limited. Indeed they are difficult to apply in the case of non-point pollution, and the rates are usually low (that limits the contribution of pollutants).

Moreover, sometimes, targeted actors benefit from distinct economic advantages that have opposite effects to those sought by dissuasive taxes. In particular, irrigating farmers profit from taxation at differential rate. This measure unbalances water tables, accelerating water pollution by inputs, and thus goes against the effects wanted by the charge for abstraction of water. This question also raises the problem of the coherence of a national policy for biological diversity conservation with other existing policies.

1.1.2. Tax advantages

In France, tax advantages are generally associated with regulations, especially when these rules are too restrictive in order to limit their possible negative consequences on economic activities of targeted agents and/or accelerate their implementation. For instance, a tax deduction may helps to respect environmental norms in farms⁴.

Tax advantages can also incite agents to create amenities on biodiversity by leading them to privilege sustainable practices. In that way, they essentially concern the sector of forests management in France. They do not aim to increase wooded areas but encourage owners to better manage existing forests (incentive to gather forests, conserve them in the long run, manage them in sustainable ways...). In the future these tax advantages will probably also affect other economic activities.

However the duration of such actions' effects can be questioned. In the case of the so-called Sérot-Monichon plan for instance, nothing guarantees that, after the 30 years contract, the owner will continue to apply ecologically durable management rules. In the same way, as OECD (1996) underlined, it is useless to allow tax advantages in order to conserve a key territory located near a city if later public authorities let it be transformed into urban landscape.

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⁴ We consider that tax deductions are incentive because, even if the regulation must be respected in all farms, farmers keep the choice on the effective measures they will set up.

In some countries, and especially in the Netherlands (OECD, 1999), tax exemptions on incomes for private investment in approved green funds are often used and supported by citizens⁵. In France taxpayers can only benefit from tax exemptions for donations to environmental protection organizations, as for any other charity organizations.

1.1.3. Subsidies and loans with preferential rates

In France, subsidies and loans with preferential rates⁶ are generally created by national or European plans or programmes. Some subsidies even have the attribute to be financed by several planning policies⁷. For instance, local concerted planned development programmes (Plans Locaux d'Aménagement Concerté) set up by Departmental councils are part both of the Single Programming Document (Document Unique de Programmation) and the French Rural Development Plan (Plan de Développement Rural National).

According to OECD, the main issue with subsidies is the possible pre-assignment of funds, which may lead to obvious inefficiencies. Many subsidies affecting biodiversity do not aim to protect the environment (even less biodiversity). Actually, LIFE is the only one that gives the possibility to create individual projects without involving strong constraints on actors targeted or territories to preserve.

However, subsidies can concern farmers as well as fishers or private owners. Even if some of them, like the Environmental Charters, are rather widespread, most of them target specific economic actors like forest owners or farmers. Others are more related to key areas. Subsidies then have mainly environmental contents and affect actors or territories with key issues.

For some subsidies resulting from regulation, actors can choose methods of application. These economic incentives also concern farmers. Subsequently it can be concluded that these actors have a strong impact on biodiversity degradation and that it is necessary to control their activity. However, it also proves that the legislator is aware of harmful consequences in terms of remuneration that lawful constraints can generate and endeavour to limit them.

1.1.4. Allowances and permits

Allowances and permits constitute incentives only if the holders have the possibility to exchange them. Such markets creation is not actually used in France for biodiversity protection, and often considered as a typically Anglo-Saxon tool. Only one example can be

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⁵ On the other hand in Greece donations are taxed at 10% whatever their recipients.

⁶ In some cases, institutions can couple subsidies and loans.

⁷ For subsidies helping investments, it should be noted that a part of the costs (at least 20%) must obligatorily be paid by the recipient. This generally advances the expenses that are refunded only if he presents its invoices. This facilitates both control and follow-up.

found⁸: development rights (“coefficients d’occupation des sols) and natural areas on urban planning maps (N zones of the Plans Locaux d’Urbanisme). Nevertheless, though the exchange is legal, it does not appear to be actually used by local authorities. But this type of incentive should be more and more used in the future since natural areas’ managers take more and more into account the results and not only the means and practices.

In France, conservation is mainly funded by the government through public policies. A consequence is that economic analysis is not always the base of conservation choices and is usually less considered than in the Anglo-Saxon system. Because of a lack of benchmark, markets creation would be difficult to set up and prices distorted at least in the short run, worsening risks of imbalances in conservation choices.

1.1.5. Contracts

Contracts are widely used in France, especially as a tool for implementing public policies. Management agreements are often contracted in order to facilitate the achievement of management constraints, for a given period of time. The contracts usually include a financial compensation based on the over costs and earnings losses caused by the so-called “good management” rules. This compensation can be extended to a financial incentive related to particular constraints (increase of 20% for CTE located on Natura2000 areas, for instance). Some contracts may even cover the preliminary investments expenses that the contractor has to support.

There are thus two main types of contracts: those that aim to finance investments expenditures and those bearing on management constraints. One can also distinguish contracts according to their legal framework: commitments (MAE and CTE are the most well-known), easements (for example in benefit of the Conservatoire du Littoral, the public agency in charge of littoral protection), contracts of costs sharing (as departmental plan for aquatic ecosystems protection and aquatic resources management called Plan Départemental pour la Protection du milieu aquatique et la Gestion des ressources piscicole and implemented between water agencies, fishermen and fishing associations and land owners), and hiring (as pluriannual conventions of pasture between farmers and National Parks).

In financial (origin and importance of the funds) or surfaces terms, contracts essentially relate to agricultural sector. Approximately they make it possible to “share” protection efforts, therefore costs but also, and it is important for them, to promote farmers’ behaviour change. These contracts are funded primarily through European Structural Funds, especially the European Agricultural Guidance and Guarantee Fund (EAGGF). French government also uses

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⁸ Another measure might be related to a similar approach: fees for fishing or hunting special species.

the so-called Modulation Funds to finance CTE, and thus get an extra positive effect on biological diversity, since granting direct aids have many perverse effects on it.

Thus, in France⁹, contracting is mainly related to farmers, and does not affect many other agents. This situation will probably change with the implementation of Natura 2000 contracts that involve all users of the ecosystems. However, some institutions contest the fact that the MEDD chose to apply the already existing legal framework of CTE for farmers. Indeed, this Ministry is not used to manipulate the contractual tool and must conform to institutions, like the MAAPAR, that already employ it. Thus even if France is the only European country that holds a specific Natural Area Management Fund (Fonds de Gestion des Milieux Naturels - FGMN), some Natura-2000 contracts will be funded through agricultural funds.

Thus, like for subsidies, contracts are targeted since they affect quite well defined actors categories or key territories. Some of them also have the characteristic to relate at the same time to a territory and its utilization. To subscribe a Natura-2000 CTE, it is necessary to be a farmer and to exploit a Natura 2000 area. Consequently it seems easier for the government to achieve its conservation goals if it correctly uses all the available contracts menu. For an external observer, it is also an easy method to know the orientations of the national biodiversity protection strategy. For example, even if MAE are well applied in France in comparison to other European countries the MAAPAR kept the greatest number of measures from the European catalogue. Thus, some contracts are used following several axes of European biodiversity conservation policies¹⁰.

Thought essentially initiated by Ministries or public institutions, some contractual measures can have more local origins. This can generate coordination issues, but also of policies consistency at the various implementation levels. Then, local programs can involve a double perverse effect: on one hand, they may remunerate for biodiversity services agents who already get enough financial assistance (especially farmers) and, on the other hand, they do not necessarily use these funds for more relevant biodiversity conservation actions.

Even more the contractual approach is said to be incentive only if recipients are voluntary. Some contracts and especially CTE tend to encourage the transformation of perverse practices into “good practices” rather than the maintenance of these “good practices” for actors who already applied them. For instance, a farmer already applying organic farming constraints and agreed by a label will not have the right to subscribe a Conversion to Organic Farming CTE.

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⁹ on the opposite of what is done in the United Kingdom for instance.

¹⁰ According to data provided by the CNASEA, one notes for example that the measure “maintenance of water plans and points” affects, in France, only 0.37 hectares for 68.27 euros paid. On the contrary, the measure “ditches rehabilitation” is implemented on 461,760.09 hectares for approximately 1.643 million euros. Contracts for the “extensive management of meadow by mean of mow” or “conversion to organic farming” stand for the half of the CTE policy expenditures.

This tends to thwart criticisms that say that CTE support farmers for practices they already had. However, during farmers' interviews, positive bargain effects can actually be detected.

Thus the definition of rules as broad as "good agricultural practices" does not seem to be efficient when public bodies are not able to know, when they sign the contract, what the farmer or the breeder is actually doing on its plots. Then, the information asymmetry clearly limits the efficiency of agri-environmental contracts.

1.1.6. Measures of economic support

Even if measures of economic support are more and more replaced by agri-environmental contracts in France and in Europe they are nevertheless important tools for the protection of areas with specific issues¹¹. They are generally set up by the EC and are well adapted to French local specificities and territorial issues. Even if they aim to maintain economic activities, they make it possible to preserve traditional patterns of production and products, in areas very specific in terms of biodiversity (generally mountains). Measures of economic support also oblige public authorities to allocate funds (it is not the case with markets creation for example) to territories having key issues and thus allow, like contracts, to solve particular and precisely identified by the authorities biodiversity conservation problems.

However, institutions in charge of the application of biodiversity protection measures usually underlined that this type of economic incentives poses the problem of more "banal" diversity conservation and that we used to see more but that should also profit from specific instruments of protection. But funds are limited and imply to select the more vulnerable or more significant species or ecosystems. Then, according to the EC, these premiums are regularly revalued in order to guarantee the coherence of the global biodiversity conservation policy but also to make sure that their amount is efficiently calculated.

1.1.7. Institution building

Besides National Parks, a multiplicity of statutes were defined to help national, regional or local public authorities when they wish to design legal areas supporting nature conservation and biodiversity¹².

It seems that the MEDD gives a great importance to local actors' initiatives and in particular to associations, and lets them great latitude in the choice of institutions to create. This

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¹¹ Measures of economic support essentially concern farmers and breeders working in disadvantaged areas: objectives 1 and 2 areas, transitional aid ones and finally mountains and high mountains.

¹² We decided not to take into account public institutions as incentive measures, because they are too numerous and diversified. It appeared more relevant to consider them as economic incentives when they are setting up incentive measures.

question addresses however coordination issues between various public and private institutions. Indeed, if information is better conveyed to higher levels, nothing guarantees the coherence of the common action. The MEDD follows here a different strategy from the one of the Ministry for the Agriculture that always chooses to set up public institutions that guarantee a minimum of consistency. On the contrary MEDD's decentralization efforts (it even seems that Regional Councils should be in the long run the competent institutions in charge of managing environment) results in a double problem of effectiveness and control.

1.1.8. Formation

Formation policies aiming to protect biodiversity are an important component of French conservation policy because they can get in touch with all the members of the society. One could even consider that initiatives that aim to educate children to new tastes and flavours encourage these future customers to diversify the products they will consume and therefore oblige farmers to preserve diversified cultivars, breeding races and production patterns.

At the European level the European Social Found has specifically the objective to finance the formation of workers, especially through the *Objective 3 SPD*. It thus makes it possible to sensitise them to new and sustainable patterns of exploitation. Associated to specific subsidies formation can then become a very efficient tool of biodiversity protect.

Finally a great part of the formation consists in financing research programs, in universities, schools, and laboratories. Ministries of the Research, MAAPAR or MEDD, European Union (EU) or world institutions like the Food and Agriculture Organization can do so. Sensitising researchers to biodiversity protection's issues helps to popularise the concept. The recent creation of the French Institute for Biodiversity (January 2001), scientific agency funded by five ministries and seven scientific organisms, is a major decision in that sense.

1.1.9. Information provision

Information provision is becoming more and more important for international economic bodies, and especially for OECD. It has the great advantage to be usable by all institutions, whatever their level of competences, and potentially concerns all actors. Even if European Agri-Environment Programmes are regularly evaluated regarding their public sensitising policy, information provision still remains the privileged instrument of local authorities and actors, and especially associations.

Indeed, information provision is an inexpensive method to sensitise agents. Furthermore local communities and associations are directly connected with the ecosystems users and tourists. They can easily implement targeted information and take care of existing failures in order to optimise the utilization of funds. French Regional Nature Parks (Parcs Naturels Régionaux - PNRs) and National Parks for example have the objective to disseminate information by

welcoming and sensitising visitors. Formation, information and education policies stand for approximately 1,2 % of the French departments' annual expenditures for environmental protection between 1996 and 1999 (IFEN data).

The question of information provision can be analysed through consumers information: the "labelling". The French commission of labels and certifications of agricultural and food products (Commission Nationale des Labels et des Certifications des produits agricoles et alimentaires) approved the creation of 442 labels and 264 conformity certifications. Through labelling, information provision does not encourage consumers but producers since their efforts in terms of biodiversity protection will be compensated by higher selling prices. But this particular experiment needs to be strongly supported by the legislation¹³.

1.2. Efficiency and control

The question of efficiency is a major issue for the policy measures in favour of biological diversity. According to the inventory we achieved (Rulleau & al, 2003), among the 57 indexed inciting measures, only 33 have the effective objective to protect biodiversity, i.e. little more than the half (table 2).

Table 2. Effective objective to protect biodiversity?

	Yes	Yes/no	No	TOTAL
European Commission	2	3	4	9
Ministry of the Environment	8	3	3	14
Ministry of the Agriculture	13	3	3	19
Other Ministries	2	1	1	4
Regional Councils	3	-	-	3
Departmental Councils	5	1	-	6
Town Councils	-	2	-	2
TOTAL	33	13	11	57

Some incentive measures aim to protect ecosystems (the resource is only a way to evaluate their efficiency) and others relate to species. But the majority is dedicated to protect at the same time ecosystems and species¹⁴ (as shown in table 3).

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¹³ In the United States in the sector of wines and brandies for example, public authorities allow semi-generic naming such as "Champagne" or "Sauternes" that make quite impossible to protect Designations of Origin.

¹⁴ Policies having positive impacts on ecosystems have also favourable effects on the pledged species, and conversely, the maintenance of some breeding races, for example, may contribute to the safeguard of a diversity of ecosystems.

Table 3. Elements of biodiversity protected?

	Species	Ecosystems	Both	TOTAL
European Commission	1	4	4	9
Ministry of the Environment	-	5	9	14
Ministry of the Agriculture	3	10	6	19
Other Ministries	-	2	2	4
Regional Councils	1	1	1	3
Departmental Councils	-	2	4	6
Town Councils	-	1	1	2
TOTAL	5	25	27	57

Finally, even if all indexed measures have at least an indirect effect on biodiversity, only 32 of them have a direct one with certainty, and 14 do not have. This statement is apparently independent of the institutional origin of the measure (see table 4).

Table 4. Direct effects on biodiversity?

	Yes	Ambiguous	No	TOTAL
European Commission	2	3	4	9
Ministry of the Environment	9	4	1	14
Ministry of the Agriculture	14	1	4	19
Other Ministries	2	1	1	4
Regional Councils	3	-	-	3
Departmental Councils	3	-	3	6
Town Councils	-	1	1	2
TOTAL	32	10	14	57

It must be noted that these judgements are about expected or hoped effects and not about actual effects. Evaluating the real impacts of each incentive measure, and even more of global policies, is very complicated. Actually, it does not appear possible to get efficient indicators. Simply quantifying the number of specimens of a protected species at two distinct periods of time is not sufficient in terms of biodiversity. In fact the protection of a given territory (or species) can involve conversely the destruction of other habitats or species, managers choices being often contradictories. Within CTE framework, whose importance in French biodiversity protection policy was established above, no evaluation process of effective impacts was actually settled on.

The main issue related to biodiversity protection measures probably remains the control. For example the MAAPAR in charge of MAE must carry out an effective control as imposed by the European legislation: it must check recipients engagements, justifying documents and effective achievements. However, these controls concern only 5% of recipients of each measure each year, selected on presumption and/or according to their level of estimated risks

and a study in the Cévennes National Park revealed that this rate is not sufficient to dissuade defrauders, calling into question the effectiveness of MAE for environmental policies (Rutagungira, 2002). Even more embarrassing, Natura-2000 contracts do not include any control of the realization of contractual commitments.

1.3. Actors' perception

Incentive instruments permit to imply agents in conservation process and “promote” the efforts they provide for the society by sharing protection costs with authorities. Usually, policies implemented for environmental protection are not perceived similarly by all users of natural resources. Indeed some are constraining (dissuasive taxes for example) and thus badly understood by targeted actors who do not grasp their finality, whereas others require a voluntary engagement of actors and then stimulate their active participation (contractual approaches for example).

In the same way, there is a strong ongoing debate in the forests sector: many measures as forestation subsidies are considered as damaging by scientists. Actually, without constraints on the choice of species foresters must plant, the trend do not seems to be favourable to biological diversity. It is even less the case in regions where concerns relate more to set-aside land (Languedoc-Roussillon for example). On the contrary, it seemed appropriate to take these measures into account since, if they are well used, especially with sustainable management objectives, they can have significant effects on biodiversity. In addition, even if their patterns of application might be re-examined in order to include more readable ecologically viable objectives for forest resource management, they are clearly part of the national conservation policy.

The implementation of Agri-Environment Programmes contributed to change farmers attitudes as well as public ones. Agriculture is no more considered as part of the problem of environment safeguard but as a possible solution.

Nevertheless, agents do not perceive all incentives similarly. The breeders, for instance, considered subsidies to graze low-intensity pastures (Prime au Maintien des Systèmes d’Elevages Extensifs) as a compensatory payment on grass surfaces, rather than as incentive to environmental goal (Dubreuil, 1999). However, these premiums, whose impact on biodiversity conservation cannot be denied, are rather appreciated by breeders and that constitutes an unquestionable advantage for conservation policies.

The weight of agri-environment in granting direct aids is undeniably weak: approximately 3% of financial aids perceived by farmers. It is difficult to extend them to areas where compensatory assistances considerably influence individual strategies of exploitations. This is probably why the French government decided to increase in more than 50% the 2003 budget allocated to MAE/CTE (with 132 million euros). The compensatory payments for areas

subject to environmental constraints (Indemnité Compensatoire de Handicaps Naturels) will receive 204 million euros budget (in rise by 4,2%).

Nevertheless, the contractual method may help to limit future conflicts between stakeholders with apparently diverging objectives. The implementation of Natura-2000 for instance was prepared in France by steering committees that discussed widely contract models before their adoption. Even if this approach delays the effective setting up of protection measures, agreements seem more difficult to call into question afterwards. Countries that chose other methods (in particular regulations) like Greece or Spain worry about later conflicts. Some experts even think that, even if the French position takes a longer time to initiate it has the advantage to be more stable in the long run.

Finally even if managers in charge of the implementation of national biodiversity protection policies recognize the efficacy of the incentive measures, they often have difficulties to find instruments implementable in territories that do not have key issues, i.e. “banal” biodiversity areas not recognized in Natura 2000 or Objective 2 schemes. Thus, biodiversity protection is again confronted to the definition policy makers implicitly gives to it.

2. Why this diversity of incentives measures?

It is probably more clear now that practical incentives refers to quite various tools and implementation patterns. Actually, it is difficult to give precise and operational limits to this scope of measures and diversity. In this second part of the paper, it will be aimed at precisising the sources and, to some extend, the causes of this measures diversity.

2.1. Institutional diversity

There are various levels of intervention on biological diversity. Then, it becomes very important to set up concerted and non-contradictory strategies of biodiversity protection, on global, international, national and local levels. There are thus several funds financing the biodiversity protection in France (table 5). Specific ones are LIFE, FGMN and the National Fund for Water Solidarity (Fonds National de Solidarité sur l’Eau). Some funds having agricultural vocation as EAGGF and the special fund financing CTE (Fonds de Financement des CTE) are also mobilized¹⁵. If expenditures for biodiversity protection in France increased by approximately 2% per year, their share in the total expenditures for environmental protection decreases (2,7% in 2001 against 2,9% in 2000) and remains weak in front of the issues.

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¹⁵ The National Forester Funds (Fonds Forestier National) was also used to protect biodiversity, but it was removed in January 2001.

Table 5. Origin of the funds

INCENTIVE MEASURES	Total	FUNDS						
		EU		French ministries			Local	Private or assoc.
		EAGGF	Community initiative	Agr	Envnt	Others		
Subsidies and loans	23	3	2	7	5	2	8	5
Contracts	21	8	-	12	5	2	5	1
Measures of economic support	4	4	-	4	1	1	-	-
Institution building	7	2	4	4	6	2	6	3
TOTAL	55	17	6	27	17	7	19	9

Table 5 shows the importance of European and national funds in subsidies and loans with preferential rates expenditures and that was expected. Indeed, subsidies are the most expensive incentive measures and thus oblige to provide important intervention funds. Public authorities, rather than to take own initiatives try to make their projects merge with European financing axes. Furthermore there are typically French projects too, such as PNRs, funded with national or local supports.

As expected, a majority of contracts have a European origin and are financed by European funds. Indeed MAE and CTE concern most French farmers and gather a great number of biological diversity conservation measures. French authorities try when it is possible to make Europe fund partly these protection measures. In the same way private and associative financings are important because subsidies and contracts also imply their participation.

Measures of economic support seem to be a European priority, involving the provision of European funds. Actually, as far as we know, none having an impact on biodiversity conservation has a national origin¹⁶.

The function of public institutions is mainly to implement national protection policy and relay information from the local level to the national one. It is thus logical that ministries and local communities contribute in the expenditures of their actions. But the institutions we considered as really incentive - i.e. having a local origin - spend more local and associative funds even if - like most others - they can get European ones especially from LIFE.

Institutions that do not benefit directly from national or European funds thus seek to collect them by setting up protection measures recommended by authorities. This seems to be the same way from a financial point of view ; but the method is quite different. Indeed, institu-

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¹⁶ Local initiatives probably exist that we did not pick out.

tions like national parks can implement their own incentive measures, since they have their own funding capacity. On the contrary PNRs have the advantage to involve all agents potentially concerned in the future conservation projects when they collect funds. This preliminary period then lets each one know its future role in the local protection and encourages him/her to better comply with it.

Thus, regions and departments help to finance many incentive measures implemented by ministries but they can also set up their own biodiversity protection policies, as soon as they do not ask any national or European co-financing. As a result, biodiversity policies receive a budget much more important from departments than from the national government.

Table 5 also shows that the main funds, in terms of expenditures and surfaces used to finance biodiversity protection measures in France, originate in agricultural policies. This is probably due to the French patrimonial approach – assuming a strong link territory-men-products - that aims to incite agents to modify their practices in order to preserve lands, rather than to create protected areas in which human activity is excluded.

The observed institutional diversity then appears as the consequence of the necessity, for setting up incentives, to raise funds and, progressively, with the creation and development of new measures, to take them from where marges de manœuvre exist.

2.2. Spatial diversity

Agents' participation in the implementation of incentive measures was accompanied by a decentralization of the decision. Projects of protection are more and more often funded jointly by the EU, French government, regions, departments and communes. This situation allows a dialogue between stakeholders in environmental questions, especially concerning information dissemination and public sensitising to biological diversity protection issues.

Widely initiated by the MEDD, this second wave of decentralization paved the way to the local level and helped synergies, especially through the progressive installation of a true partnership within Regional Agriculture-Environment Committee (Comité Régional Agriculture-Environnement). Regions get a decisional competence for the management of rivers, more generally development of natural environments (namely with the creation and the management of PNRs) and public sensitising to biodiversity problems. Departments mainly aim to manage water and delimitate key natural areas but also to diffuse information.

Towns have little incentive capacity because of their limited financial and management resources. They use rules but can also be an efficient link between governmental bodies and public agencies at the local level. The law relating to territorial administration of the Republic (law n°92-125 of February 6th, 1992) also gave them the possibility to join in “town communities” and provides them competencies for environmental protection. These com-

munities guarantee the effective installation of an integrated and concerted management of biodiversity problems, whose importance was already stressed.

Problems of biodiversity protection do not arise with the same acuity in all territories. That implies taking into account local specificities and thus tends to consolidate MEDD's decentralization approach in decisions making concerning the choice of measures and methods. The MEDD aims to give the responsibility of PNRs (and later Regional Nature Reserves) to regional councils. For instance, local communities had a certain efficacy in the creation of PNRs that now cover 65 000 km² (i.e. 12% of the French metropolitan territory).

2.3. Actors diversity

Behind the diversity of institutional origin and spatial competencies, the main reason that may explain the large number and the pattern variety of incentives is clearly the diversity of concerned actors. The farmers have a wide control upon the territory, but from the hunters and fishers, to the pupils in the schools, the whole population may impact biodiversity and may then be concerned with incentive policies.

2.3.1. Choice of actors to incite

In France, biodiversity policies generally chose to set up contractual measures and privileged the users of ecosystems and especially the farmers (as shown in table 6 whereas data show an important regression of their number). Otherwise, targeted agents are land and forest owners and this situation is linked to the importance of subsidies that affect the sector of forests.

Table 6. Targeted agents

INCENTIVE MEASURES	Total	TARGETED AGENTS					
		Users of ecosystem.	Owners	Assoc.	Tourists	Consumers / taxpayers	Local coll.
Dissuasive and incentive taxes	6	3	2	-	1	-	-
Tax advantages	8	5	4	-	-	2	-
Subsidies and loans	23	21	19	12	1	-	11
Allowances and permits	1	-	1	-	-	-	-
Contracts	21	21	7	6	-	-	6
Measures of economic support	4	4	1	1	-	-	1
Institution building	7	5	6	7	-	-	7
Formation	3	3	-	-	-	-	-
Information provision	3	3	-	-	-	-	-
TOTAL	76	65	40	26	2	2	25

But these measures have the disadvantage to be discussed every 4 or 5 years, even more in a country where political variations are frequent. In addition to this question of the stability of political choices from both economic and issues point of view, one can wonder whether in the long run, MAE will not privilege only intensive farmers who will have succeeded in maintain their activities with the detriment of other rural agents who run the risk to disappear.

Indeed, in spite of multiple interventions to preserve agricultural activity, set-aside lands are still evolving: according to Central Service of Investigations and Statistical Studies (Service Central des Enquêtes et Etudes Statistiques) of the MAAPAR data, fodder meadows and surfaces have lost 4.3 million hectares between 1970 and 2000. Subsequently, the relevance of the safeguarding of agricultural activity as an indispensable condition of biodiversity conservation can be questioned. This interrogation also calls into question the subsidies that, even according to the EC's evaluation of Agri-Environment Programmes, are not correctly adapted to local needs and characteristics.

Agriculture is not the only economic sector that raises problems. The Ministry of the Public Works exerts important pressures on environment: artificial non-built lands, built lands, roads and car parks increased in 320,700 hectares between 1992 and 1997. That means an evolution of 1,6% per year (Jancovici, 2000).

All these considerations lead to consider that regulation requires a detailed attention as well as economic incentives. It can be concretised by the creation of institutions in charge of biodiversity conservation every time that it is possible. Then the question of users maintenance in ecosystems is difficult to solve and one is brought to wonder whether, in the long run, France is not likely to privilege the creation of large protected areas like in the United States.

2.3.2. Actors' involvement

Even if the national government is still prevailing for policies conception and basic infrastructures implementation, other actors' participation becomes progressively essential and becomes clearly visible in the implementation of environmental policies at regional and local levels. Local authorities for instance were solicited for the setting up of agri-environmental local operations (Opération Locale Agri-Environnementale), sort of agri-environmental contracts setting up by regional councils according to local specificities that aim correct more specific problems at the regional level. Each resulted in the organisation of a local debate, mobilizing of all categories of actors.

In the same way, PNRs are organized as joint union composed by representatives of elected officials. All stakeholders participate, and local authorities expenditures were essentially focused on these operations. Similarly, local projects leave an important scope of possibilities to local authorities, but also to workers, users and associations' representatives (especially environmental associations').

2.4. Instruments diversity

The contractual approach seems to be a specificity of the national government, probably because it is the best tool to target the actors it wishes to incite. Moreover contracts allow to make them take part of conservation, become aware of biodiversity conservation issues and means each one has to success and to promote its efforts. The contractual approach comes from a French vision of biodiversity conservation that prioritises maintenance of men in ecosystems (this slant is not universal, some countries call it into question and prefer a conservatory management of territories).

But, the contractual approach is constraining and limits doubtless the number of probable interested recipients. Furthermore agri-environment seems to be linked with a lot of other biodiversity protection measures. Its financial importance is doubtless limiting possibilities of other initiatives' implementation. This question leads to ask whether the choice of the measures setting up is not related to their costs. Indeed, subsidies seem much more expensive to put up than contracts. But, contracts oblige to devote funds annually and that seems to be a stronger constraint. Moreover, when the contract falls due, nothing guarantees that the recipient will continue to apply ecologically viable constraints. That is fundamentally why the Languedoc-Roussillon region chose to limit the use of CTE and to replace them by its own agri-environmental measure called Plans Agriculture-Environnement-Territoire.

Thus, to our mind, the development of contractual tool comes from a will of authorities to imply agents targeted in the conservatory process through a voluntary and concerted method.

Conclusion

After a fast development in the nineties with the setting of the agri-environmental policy, the biodiversity protection incentives in France, seem to fall back and tend sometimes to be replaced by regulations. Nowadays, research programs on biodiversity are not only mentioning negotiations, but also regulations.

This situation is probably related to the difficulty of appreciating the real effects of biological diversity conservation policies: they are usually pervasive and result from long run strategies. Net effects of conservation policies are often difficult to calculate since they can have positive effects on some species but negative ones on others. Then regulation is a way to ensure a minimal conservation when authorities are disappointed in the short run by measures employed, even more when they are expensive regarding public funds or human investments and political changes tend to worsen this situation.

In the implementation of incentive measures, agriculture was particularly stressed because it uses large parts of the national territory that could be concerned with biodiversity conservation policies. Thus, authorities promote agricultural activities that contribute to the conserva-

tion and the sustainable use of natural resources and environment. But, the interventions that aim to maintain a responsible agriculture in risky zones are weakened by the continual progression of set-aside land.

The French conservation policies that diversify the tools for biological diversity protection and improvement appears relevant to its objectives. Nevertheless, the important questions of control and assessment of measures efficiency (in particular of contracts) remain addressed. Expenditures for direct biodiversity protection policies in France are weak compared to those committed for the agricultural policy even if they allow to manage the environment on the whole national territory.

Local authorities can support effectively the national government for the setting of suitable management policies ; but coordinating environmental policies with economic development ones and local initiatives appears as a necessity. Decentralization can be a way to reach that point, if it can avoid the risks inherent to the gathering of decision-makers.

In addition to economic incentives and regulations, this paper highlights the existence of an important panel of tools usable for biodiversity conservation. Authorities can be seconded by experts' know-how in order to make proposals on needs and ways to satisfy them with a lower cost. Thus they tend to diversify the instruments they used, while limiting those that have perverse effects. This diversification would make possible to transcend problems raised, on the one hand, by measures mainly based on agriculture and, on the other hand, by the competing use of lands following the urbanization and industrialization's implosions. However, some situations are hazardous for biological diversity and economic incentive may be insufficient. It then remains important to promote regulations and possibly consider the creation of protected areas.

Finally, biodiversity conservation strategies, to be efficient, must conform to their object, and therefore be various and multiple. They must have the capacity to imply the greatest number of agents with suitable means. According to EC's evaluation of Agri-Environment Programmes, "*an optimal approach would include both 'deep and targeted' measures available to a few farmers and 'wide, but limited' measures to enable all farmers to participate in the process*". This may apply to the entire national policy of biological diversity conservation.

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