

Financial compensation for environmental services – the case of the Evian Natural Mineral Water (France)

Pierre Defrance

Abstract

The Evian bottled Natural Mineral Water Company in France initiated in the late eighties a promising multisectorial water protection policy aiming at maintaining the Evian Natural Mineral Water (NMW) quality by promoting a sustainable development of its catchment area. The assessment illustrated in this chapter focuses on the payment for ecosystem services (PES) scheme developed by the association for the protection of the catchment area of Evian mineral water (APIEME) with local farmers. It demonstrates how the Evian Company can maintain a land use and traditional agricultural practices on the catchment area presumed to preserve the quality of the Evian Natural Mineral Water, without buying any land around the catchment area, by financing agricultural related projects. It also demonstrates that the financial dimension of PES schemes may not be the most important one to explain their success. Defining precisely what is the issue, gathering all stakeholders, sharing knowledge and building trust are all important components of a successful PES, even if they are creating a system defined by high transaction costs. Lessons learned from the Evian case study should help designing and implementing PES schemes in Europe and contribute to the development of preventive policies.

Key words: water quality, payment for environmental services, Natural Mineral Water, transaction costs

Acknowledgements

This chapter is the result of discussions between all partners in the EPI-Water consortium. It benefited from specific contributions of Pedro Andrés Garzon Delvaux and Verena Mattheiß, ACTeon. The author would like to thank Patrick Lachassagne and Jean-Jacques Beley from Danone Water France and Cathy Le Hec from the APIEME who shared most of the information.

1. Introduction

Evian (owned by Danone group) is one of the major brands of bottled Natural Mineral Water (NMW) in the world. Its water comes from several sources in the French Alps, around the city of *Evian-les-Bains*. The French legislation for NMW is very strict: the purity, composition, temperature and other essential characteristics of natural mineral water must remain stable. In addition to the geological natural protection, water from Evian, as a Natural Mineral Water, is defined by its groundwater origin, its purity and the stability of its mineral content and the absence of any chemical treatment, and of any additive, disinfectant or preservative. The right to use the “Natural Mineral Water” label would be lost if mineral concentration was to change.

Twenty years ago, two long-term evolutions could have affected the Evian Natural Mineral Water (NMW) and the agricultural area related to it: (i) the evolution of agricultural practices from traditional dairy farming to more intensive agricultural practices, and (ii) the drive to open up the area by improving links to other regions in France and Switzerland.

A few managers of Evian looked at these evolutions seriously, even though the NMW was not reported to be threatened by any kind of pollution at that time. Learning the lessons from what happened to another NMW company recognized on an international level (Vittel, Nestlé Waters), they initiated in the late eighties a promising multisectorial water protection policy tackling wastewater collection and treatment, town and country planning, wetland protection, tourism, biodiversity and agriculture.

This policy mix (regulatory approach and economic instruments) relies on the association for the protection of the catchment area of Evian mineral water (APIEME), an association which comprises the villages from the spring area that benefit from a government tax on bottled water, the villages from the catchment area, the Evian Company and national public bodies. Its objective is to protect the Evian Natural Mineral Water (NMW) by promoting a sustainable development of its catchment area.

The APIEME “agricultural economic instrument” policy which can be classified as a scheme of payment for ecosystem services (voluntary agreement between farmers and one industry), is part of the policy mix. This instrument is oriented towards the development of a modern environmentally friendly agriculture focusing on dairy production linked to cheese making under the protected designation of origin (PDO). Basically, the Evian Company helps financing projects to maintain a land use on the catchment area presumed to preserve the quality of the Evian Natural Mineral Water. For each project, an agreement was signed by the APIEME and the project owner designed by the Gavot Plateau farmers’ association (SICA). For instance, subsidies were targeting small to medium size farms, helping them to follow the European sanitary norms evolution and to favour close loops and a higher income.

The economic policy instrument developed by the Evian Company through the APIEME to preserve the Evian NMW quality can be referred to as one of the rare schemes for environmental services in France. While the institutional context (haziness of the definition, lack of guidance) and high transaction costs are among the major barriers to PES schemes development in Europe, the example of Evian reveals both can be seen as opportunities. This first assessment of the Evian case study also contributes to the definition of preconditions for the implementation of such EPI.

2. Setting the Scene: Challenges, opportunities and EPIs

The city of Evian-les-Bains is located on the banks of Lake Lemman in the north-east of the Rhône-Méditerranée and Corse River basin district (Haute Savoie, French department in the Rhône-Alpes Region). The Evian bottling plant is located in *Amphion-les-Bains* (*Publier* commune), next to *Evian-les Bains*. It constitutes one of the most important plants of its kind in the world, producing 6 million bottles per day (2014). 2200 million of Evian NMW bottles are thus consumed in France and also, for more than half of the volumes, worldwide in about 140 countries. In France, more than 1 800 jobs are directly linked to the Evian Natural Mineral Water (over the 10 000 jobs that are linked to Natural Mineral Water in France) and indirect jobs would be three times more (around 30 000 jobs in France)¹.

The catchment area is located on the Gavot Plateau, at an elevation ranging from 800 to 1200 m and exhibits a middle mountain climate. In turn, the spring area is located at an elevation

¹ CSEM, 2007, 'L'eau minérale naturelle : Un produit naturel et protégé, une industrie responsable, un emballage recyclable'. Livre Blanc

around 400 m and benefits from a more temperate climate influenced by the Lake Geneva. Due to a particular geological configuration, the water of Evian is well protected in a confined (artesian) aquifer. Rain- and snowmelt-water infiltrates on the 35 km² catchment area and flows to the spring through, first a multilayer quite low hydraulic conductivity system, during more than 20 years, giving to the water of Evian its particular composition, and second, in the last part of the NMW transit, through high permeability sands. In addition to the natural geological protection, the Natural Mineral Water also benefits from two kind of protection: (i) legal protection (the “Declaration of Public Interest” – DIP) that is mostly conceived to maintain the integrity of the impermeable cover of the aquifer, and (ii) technical protection (design and protection of the spring catchwork such as using stainless steel pipes).

Consequently there is no qualitative issue for this resource: concentration of nitrate is stable around 3.7 milligrams per liter while the maximum allowed nitrate concentration in France is 10 mg/l for infants, 15 mg/l for mineral water and 50mg/l for tap water; and no traces of pesticides were ever found (concentration are below the analytical detection thresholds); more generally, no traces of organics, mineral or biological contaminants were ever reported.

However, the aforementioned three-fold protection does not protect the catchment area whereas the high quality of the NMW was interpreted amongst others as the result of harmless traditional agricultural practices. The main economic activity in the catchment area is agriculture (that represent 60% of the total land use, among which 51 % of meadows and around 9 % of crops), represented by dairy cow breeding for a typical local protected designation of origin (PDO) cheese production². 55 farms, mainly small to medium-size farms, are located on this area covering 2 100 hectares of farm land (Buric et al., 2011).

But, in the late 1980s, direct subsidy from the European Common Agricultural Policy (CAP) did not benefit small and large-size farms in the same way and small scale hill farming might not have been profitable enough to keep their traditional practices (Bazin, 1994): regrouping of land would have become an option. With the removal of hedges and agricultural intensification, farmers would have increased their production of maize (instead of meadows) and used more fertilizers and pesticides. The change of agricultural practices and urban development might have become possible threats to the hydrological balance conservation of the site.

The Evian bottling company directors thus decided to develop a new water protection policy based on win-win actions, downstream-upstream economical redistribution processes and voluntary agreements. The policy was launched more than 20 years ago (in 1992) when the association for the protection of the APIEME was created. The villages from the spring area (1/3, less than 5 % of their legal tax revenues³) and The Evian Company (2/3) finance this association that works as a “*democratic water parliament*”. This association plays the role of an intermediary, funding collective projects aiming at maintaining and developing modern environmentally friendly agriculture. It is translated in the ground by limiting the number of dairy cows grazing on the impluvium and which are only fed by local pasture.

3. The payment for environmental services scheme in action

² *Abondance* and *Reblochon*, two brands among the most famous of the French cheeses.

³ *The villages from the spring area benefit from an old French regulation that institutes a specific tax on bottled natural mineral waters such as Evian NMW. Thus the Evian Company gives money to these cities for each bottle of Evian sold while the villages of the catchment area do not receive anything.*

3.1. The EPI Contribution

3.1.1. Environmental outcomes

Evian's preservation policy can clearly be classified as a preventive policy. The EPI aims at changing farming practices and reducing pressures on the catchment area. This makes conclusion on the EPI efficiency difficult.

The concentrations of pollutants have not changed when we analyse the thousands of tests that are carried out in line with European and French legislations associated to NMW. Otherwise, Evian would have lost the NMW label. Without the status the Company would have lost the high quality premium of NMW. In addition, the impacts of changes of agricultural practices early nineties would only start being measured today or in a few years in terms of water quality changes considering the 20-year transit time of the infiltration.

But the EPI clearly contributes to maintain a specific land use and traditional agricultural practices. Interviews with experts and the diagnostic of the French National Institute for Agricultural Research (INRA) (Christofini *et al.*, 1994) indicated that, in the absence of EPI, agriculture may have continued its intensification and specialisation. The surface of maize in the impluvium area would thus have increased, and the number of farmers would have decreased. In addition, milk production would have partly switched from products of quality (milk used for the production of PDO cheese) to industrial production (selling milk to cooperatives located in the plain).

When the APIEME realized an inventory in 2002 with approximately the same methodology and typology than INRA, there were 71 farms (livestock farming, mostly dairying, including part-time farmers) in the area instead of 100 in 1992 (also including part-time farmers), that is a decrease of almost 30% within 10 years. But the number of professional farmers remained almost unchanged during the last 20 years (Buric *et al.*, 2011). The dairy farms' production was dedicated to the production of PDO cheese (*Reblochon* and *Abondance*), that is around 7.7 million litres of milk (about 770 tonnes of cheese) per year instead of 7.2 million litres of milk in 1993. In general, the dairy production is based on maize, which is considered as an important factor of nitrates increase (Perrot-Maître and Davis, 2001). But the situation is different for the Gavot Plateau thanks to the EPI. Developing modern environmentally friendly agriculture associated to the PDO system allowed to limit the increase of maize surface and even reduce maize surface in the catchment area (from 3.8% of the total agricultural surface to 2.6%) at least for the ten-year period considered. As an efficient preventive tool, the PES scheme leads to a reduction of pressure and is crucial to lift the long term threat that agricultural intensification is posing to the NMW preservation.

3.1.2. Economic outcomes

When facing a situation of pressure or pollution, natural mineral water bottlers have five alternative options (Depres *et al.*, 2008):

1. doing nothing and relying only on natural protection;
2. forcing polluters to change their practices relying on legal or regulatory actions;
3. relocating their activity by choosing new and non-contaminated resources;
4. buying all lands around their catchment area;
5. achieving a contractual arrangement or a voluntary agreement with polluters.

When facing this choice in the early nineties, the Evian bottling Company (Danone Waters) was in the comfortable situation to have time: the water resource was not reported to be threatened, except by some chloride ion (Cl⁻) but such pressures were considered to be very limited.

At that time, no specific study was undertaken to quantitatively define the least-cost alternative or to compare costs to benefits in order to support decision-making. However, the evolution in land use became rapidly obvious to the managers of Evian and they identified the need to reconcile the development of villages from the source and impluvium areas by integrating them into the decision-making process. The means chosen was to design win-win actions based on voluntary agreement and downstream-upstream financial redistribution that would maximise economic, environmental and social benefits (option 5).

The cost of this payment for environmental scheme is estimated to around EUR 85 000 per year and EUR 35 per hectare (projects dedicated to agriculture represent 13% of the EUR 700 000 annual budget of the APIEME). Budget forecast defined in the agreement signed by the parties in line with recommendations made by INRA in 1994 is the following:

- to comply with standards of livestock buildings (impermeabilisation and coverage with a roof of manure farm dunghills and increase storage facilities) and to comply with standards of dairy farms: both subsidies were designed for a six-year period from 1996 to 2001 and the total was constrained to a maximum EUR 33 500 yearly contribution from the APIEME;
- to renovate and establish cooperative dairies for cheese production: these subsidies were designed for a fifteen-year period from 1995 to 2009 and they were constrained to a maximum EUR 61 000 yearly contribution from the APIEME;
- to prevent any leakage of the pesticides or fertilizer spread on the few maize plots of the plateau, technical studies implemented with the farmers allowed elaborating an adapted methodology. The resulting protocol does not ban pesticide use and helps farmers to adopt environmentally friendly practices (shallow ploughing between the maize rows and light herbicide application on the rows). A new manure management plan was also designed in order to avoid the excess of fertilizer on specific plots these projects were designed for five-year period from 1995 to 1999 and they were constrained to a maximum EUR 24 500 yearly contribution from the APIEME. They favoured milk processing operations and closed loops in order to maintain traditional farms and increase farmers' incomes;
- technical support from the Chamber of agriculture with experimental sites: the APIEME contributed up to EUR 10 500 yearly to this action.
- In addition to these actions, a charter of good practices was developed with the contribution of INRA, the SICA, farmers and the APIEME. Some of these subsidies were depending on the signature of this charter.

The budget parties agreed on is around EUR 1.3 million. But the effective total budget allocated to actions aiming at developing a modern environmentally friendly agriculture is even higher (more than EUR 1.5 million). Most of the contribution comes from the Evian Company (more than two-thirds). Thus the Evian Company and the villages located in the spring area, which are the beneficiaries of the EPI, support most of the cost of its design and implementation⁴.

⁴ With the exception of a little part of the total budget of the APIEME that comes from subscriptions. It represents EUR 35 000 over the 19-year period of implementation, that is around EUR 170 per year per village.

Looking back, other options that were identified as feasible in theory can be considered as too risky or very expensive compared to the voluntary agreement. For instance, buying all (or part of) the lands of the impluvium area could have been an option but it was not realistic at that time for economic, legal and social reasons. The price of land in this area is quite high due to the proximity to the Lemman Lake and Switzerland. In addition to this financial barrier, national laws prevent the purchase of agricultural lands for non-agricultural uses. And finally, this policy might have led to social tension weakening the relationship between Evian Company and the local stakeholders.

3.1.3. Distributional effects and social equity

Three types of co-benefits can be identified. Regarding how the EPI impacts on farmers' activity (costs, profits, incomes), the first basic impact to be considered should be the redistributive effect of the functioning of the APIEME. Subsidies granted to farmers by the APIEME through the EPI come from the global budget of the APIEME, which is funded by the Evian Company (two-third) and the remaining by the villages located in the spring area. Thus money is redistributed from downstream (the beneficiaries of the EPI) to upstream (the farmers who contribute to maintain the quality of NMW).

This redistribution of money through the EPI compensates additional efforts farmers have to make (increase of production costs), for instance by reducing their use of pesticides. The EPI also helps small farmers to face additional expenses associated with new regulations (around EUR 300 per dairy cow for 16 farms for complying with standards of livestock buildings).

In addition, the political voice of farmers has been heard through meetings during the design (surveys amongst other), implementation and operation of the EPI. They have greater say since the creation of the SICA and thus thanks to the implementation of the EPI.

Finally, villages located in the catchment area and the Evian Company have both benefited from the creation of the APIEME: at local scale, villages have improved their access to the decision-making process; the Evian Company found a new space for discussion at local scale and reinforced its legitimacy at international scale.

3.2. The EPI setting up

3.2.1. Institutional set-up

The most embedded institutions relevant for the EPI are found at local level because both the environmental asset (quality of NMW) and the EPI (voluntary agreement between farmers and one industry) are very specific. First, the quality and properties of Evian NMW used to be "miraculous" and "timeless" for consumers and the general public. People generally do not know where the drinking water they receive at their tap is coming from and get a poor understanding of groundwater functioning or problems (Rinaudo, 2008). The case of NMW reinforces this common perception as water emerges from the underground and people can only see the source.

In addition, the relationship between the Evian Company and the farmers was complex in the nineties because most of the part-time farmers used to be employed by the company or had someone in their family employed by Evian. Thus, people living in the villages located in the catchment area were connected to the people living in the villages located in the source area and to the company. The company was used to negotiate with farmers in particular during the locally well-known strikes. But this link was becoming weak in the nineties as more and more people living in the villages located in the catchment area found jobs in Switzerland and got disconnected from the

company. This situation might have made negotiations more complicated because of a loss of reciprocal knowledge, trust and understanding.

The implementation of the payment for environmental services scheme also benefited from three types of intermediaries. First, the SICA created in 1993 actively contributed to the partnership between farmers, the APIEME and the Evian Company. One of the members of the SICA in particular played an important role in the process. While he was experiencing the intensification and specialization of agriculture in the Gavot Plateau and in its own farm, he decided to shift back to traditional farming and to promote products of quality (milk used for the production of PDO cheese and tourism). He fully contributed to the success of the EPI as he became the president of the SICA.

Then, the research team from INRA who helped to switch from “ready-to-use” solutions at plot of land scale to solutions compatible with the maintaining of a traditional and sustainable agricultural based on quality products.

And finally, the APIEME, as a neutral organisation, gave space to discussion and negotiation and become one of the most important preconditions to the success of the EPI. The idea of including the villages of the spring area (as beneficiaries) also increases the fairness of the instrument and made easier negotiation and agreement on the design of the EPI.

3.2.2. Transaction costs and design

A specific attention was paid to transaction costs as they are considered to be the main barrier to the development of payment for environmental schemes. Transaction costs occur during the formulation, the design and the development of the EPI as well as during the implementation and operation of the EPI. In the case of the Evian NMW, transactions costs were relatively high and concentrated during the first years.

The choices of the EPI and its design have not been guided by any models or tools. However two types of studies were undertaken in order to help decision making. The first type of studies was related to the understanding of the hydrogeological functioning of the system, i.e. understanding where the natural mineral water comes from and how it infiltrates. These studies were essential to give a space to the idea of protecting the water resource at source by defining and delineating the catchment area. But they are not specific to the design of the EPI and are not considered in the analysis of transaction costs. These studies were implemented at least since the sixties and are still ongoing.

Second, a partnership was developed between the Evian bottling Water Company and a research team from INRA starting in 1990 and ending in 1997⁵. The objective was to get a better understanding of the catchment area in terms of ecological functioning and human activities. The partnership played a strong role in determining the preventive approach and actions as Evian did not have competencies in agriculture and did not know i) which where the most relevant levies to maintain a traditional agriculture in the area and ii) how to reduce pressures. Their conclusions indicate the need for a water preservation policy pointing to the fact that pressures existed and were increasing on the catchment area. However, the risks for the NMW were unknown, in particular because of stocking and denitrification phenomena occurring in soil and wetlands. An interesting part of this partnership was dedicated to make a diagnostic of current activities in the catchment

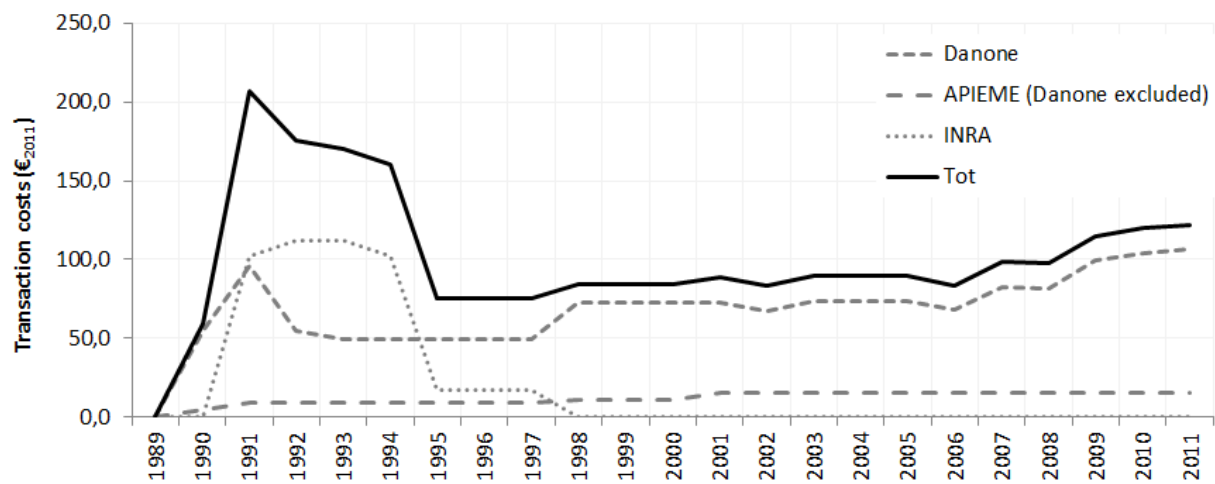
⁵ None of these related studies was published. Most of the information was confidential in the nineties. One reason for this was the risk of misunderstanding. Communicating about a water quality preservation policy could have been counterproductive in that context. It was thus focused on experts or stakeholders capable of understanding these issues.

area identifying potential pressures, in particular coming from agricultural practices (Christofini *et al.*, 1994). This diagnostic lasted two years including a survey of farmers which aim was to develop a typology of farms based on practices and impacts on water quality. It played also a mediating role ensuring mutual comprehension and allowing negotiations between the Evian Company and farmers.

Thanks to the recommendations of INRA, it did not take much time to select the EPI (define which will be the projects funded) and implement it. Based on the diagnostic and their experience, the farmers created the SICA to harmonise their requests and put forward feasible measures. They were negotiated and accepted by the APIEME. As such, both the INRA and the APIEME helped reducing transaction costs during the design and the implementation of the EPI.

Since 2006, from 3 to 6 meetings are organised each year, gathering one representative from the Evian Company, representatives from the SICA and the Chamber of agriculture and two representatives of farmers for each villages located in the impluvium area. These meetings aim at discussing progress, barriers and future initiatives of the EPI. Before 2006, similar meetings were organised but in a less structured and regular way. In addition, one of the representatives of Danone Waters is partly dedicated to the EPI through the APIEME, but the sharing has not been estimated between the contribution to the EPI and the functioning of the APIEME.

The TCs associated to the monitoring and the enforcement (ex-post TCs) are quite low because most of the subsidies are distributed in exchange of invoice. However, transactions costs associated to the charter of good practices are not well defined, but they are probably low, potentially at the expense of the effectiveness of the EPI. Other monitoring costs are partly shared with other actions of the APIEME, reducing their importance for the EPI.



Source: Author

Fig. 1 Evolution of transaction costs related to the APIEME creation and implementation

At the end, transaction costs were estimated at around EUR 100 000 per year in average, and more than EUR 150 000 in average during the first 5 years of the process. The values are quite uncertain because part of the costs considered can also be attributed to the whole policy mix and a few others are not considered in the analysis: regular meetings between the SICA, the Chamber of agriculture, representatives of the farmers and the APIEME as well as the creation of the SICA in 1993 should be considered as TC and added.

However, the estimated transaction costs are relatively high in comparison to the cost of the EPI (between EUR 85 000 and EUR 200 000 per year depending on the period considered). But this is a condition for the success of the payment for environmental services scheme anticipated by the Evian Company before it implemented the EPI: it was necessary to give time and space for negotiation to get a compromise between the expectations of the Evian Company and the requests of farmers.

3.2.3. Implementation

The EPI has been designed to be very flexible. First of all, the diagnostic (made by INRA) contributed to take into consideration local particularities, heterogeneous farming and a diversity of pressures. A list of actions was thus developed considering three types of farms and various scales of action. In addition, both the schedule and the funding were discussed and negotiated during the process: the period of certain subcontracts was extended allowing more farmers to benefit from the financial facilities aiming at complying with the standards of livestock buildings; the budget of the APIEME allocated to agriculture increased from around EUR 85 000 per year to EUR 200 000 to finance new relevant projects; and in some specific cases, the Evian Company added money when the annual budget of the APIEME was insufficient compared to the needs. The flexibility of the EPI thus contributed to make implementation easier.

The contribution of stakeholders also played an important role during the design and implementation of the EPI. As the instrument relies on voluntary agreements, farmers have been interviewed during the early stage of the design phase to identify which actions would be relevant. In addition to this, discussions and consultations were organized with farmers (the SICA) to negotiate the financial conditions of the contribution of the APIEME and define collective projects without individual contracting. From 2005 to now, regular meetings (from three to six times a year) are organized by the APIEME gathering the SICA, the Chamber of agriculture and two representatives of farmers from each villages of the catchment area. Other stakeholder representatives were consulted through the APIEME (villages and the Chamber of agriculture) and decisions were finally taken within the association chaired by the mayor of one of the villages located in the catchment area.

However, the creation of the APIEME was the initiative of the Evian Company. It can be considered as the most important driving force behind the whole process and in particular the EPI. Preserving the quality of the Evian NMW is a priority for the parent company. Evian's investment in terms of time, money, ideas and technical support seems to be one of the key of the success of the EPI and more generally the success of the APIEME and its policy mix. The effort made to understand farmers and their traditional agriculture and to establish a dialogue with all stakeholders were at least as important as financial contribution and technical support.

4. Conclusions

In the Evian Natural Mineral Water case study, the financial dimension may not be the most important one to explain the success of the EPI as it remains relatively low in comparison to potential benefits (for the Evian Company, for villages located in the spring area and for the villages located in the catchment area). Gathering all stakeholders and sharing knowledge and point of views to define and fund collective projects ahead of its time has to be considered as the main reason to both the preservation of the stability of the Evian NMW and the development of a modern environmentally friendly agriculture. Even though environmental, economic and social outcomes were not quantified

with accuracy, the EPI seems to send right and coherent incentives to stakeholders with preliminary results showing that the situation evolves in the right direction (a sustainable development of the catchment area contributing to protect the NMW).

Estimated transaction costs are relatively high in comparison to the cost of the EPI, both ex-ante fixed costs and ex-post variable costs. But it appears surprisingly to be a condition for the success of the EPI anticipated by the Evian Company before its implementation. First, the partnership developed between the Evian Company and INRA in 1990 contributes to get a better understanding of the catchment area in terms of ecological functioning and the diversity of practices and potential pressures. Thus it played a strong role in determining the preventing approach and actions as Evian did not have competencies in agriculture. The diagnostic helped to reduce asymmetric information while the results were shared with farmers. Involving INRA in the process finally contributes to reinforce reciprocal trust between the Evian Company and farmers.

Second, the creation of the APIEME allowed parties to build shared ownership on the issues and to take part in the decision making. It also gave space to discussion and negotiation by externalizing the initiative. In addition, the creation of the SICA helps harmonizing the request of the farmers and contributes to reduce TCs, while the Chamber of agriculture provides technical support.

Finally, the delivery mechanism the Evian Company chooses through the APIEME both contributes to the high level of transaction costs and helped reducing them. Indeed, the EPI allows flexibility (extension of the subsidies' duration) and requires regular meetings with stakeholders. But, it also prevents from conflicts and complex legal procedures - both associated with high transaction costs - by trying to reach compromises between the expectations of the Evian Company and the requests of farmers. The EPI has thus been welcomed by most of the stakeholders.

These three dimensions (financial, technical and social) and their relative influence over the process were also described as key factors to explain the success of the PES scheme used by Vittel (Nestlé Waters) to protect its mineral water (Perrot-Maître, 2006). The water protection policy developed by the Evian Company is also in line with the final recommendation of Perrot-Maître (2006) by not focusing on one particular polluter but by taking a multisectorial approach. All potential sources of pollution or positive land use (and land cover) are taken into account by the APIEME through a coherent water protection policy mix.

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