FRANCE

Payments for improved watershed management practices

The French legislation for "natural mineral" water is very strict. Each brand name is associated with maximum allowed levels of nitrates and, importantly, water treatment is not allowed: if water quality is not achieved naturally, the brand name and the business associated with it are lost. Protecting the ecosystems providing water filtration and purification services in the catchment where the springs are located is therefore critical for reducing business risks and maintaining the profitability of the operation.

In the early 1980s, Vittel, a subsidiary of Nestlé Waters and a world leader in natural mineral water, was faced with the increasing rate of nitrates and pesticides level in an important artesian spring in the Vittel catchment. Promoted the European Common Agricultural Policy, the traditional hay-based cattle ranching system had been increasingly replaced by a maize-based system, with limited free-range grazing and increased stocking rates. The increased nitrate and pesticides rates were caused by leaching of fertilizer and pesticides from the maize fields, overstocking, and poor management of animal waste.

Vittel considered a range of options. Doing nothing was too costly and implied closing the business. Relocating implied losing the brand name and the associated premium. Purchasing all land in the 3,500 ha catchment was socially, legally and economically not feasible. Use of legal action to force the 40 farmers to change their practices was not practicable since it was not technically possible to demonstrate the responsibility of individual farmers. The only alternative was to establish an incentive scheme for farmers to voluntarily change their practices, which would essentially involve going back to extensive dairy cattle ranching.

Farmers were asked to give up maize cultivation for animal feed, and to adopt extensive cattle ranching pasture management by reducing carrying capacity, composting animal waste, giving up agro chemicals, balancing animal rations to reach optimal milk productivity and farm profitability, and by modernising farm buildings accordingly. In return, farmers were provided with a long-term incentive package that included: (i) 18 to 30 year contracts; (ii) the abolition of debt linked with land acquisition; (iii) the acquisition of 1,450 ha of land which was left in usufruct to farmers for up to 30 years; (iv) an annual subsidy of about 200 Euros per ha over seven years to ensure guaranteed income during transition period (which corresponded to about 75% of disposable income); (v) the reimbursement of farmers' debt up to 150,000 euro per farm to invest in new equipment and buildings; (vi) free labour to apply compost in farmers' field and free technical assistance.

The total cost of the programme for the first seven years was about 24 million Euros (= 980 Euro/ha/yr).

Vittel was originally confronted with resistance from farmers. It took ten years to convince farmers to change practices. Partnerships with the Rhin Meuse River Basin Agency and the French National Institute of Agronomic Research, which co-financed four years of research to identify optimal agricultural practices, were critical to the success of the scheme. The municipality (which benefited from tax revenue and employment) was also supportive. An intermediary institution (Agrivair), located in the heart of the watershed, was created in 1992 to work with farmers. By 2004, the 26 remaining farms (several had chosen early retirement) had adopted the new practices and 92 percent of the basin was protected.

New challenges have caused the programme to evolve over time. For example, urbanisation in the area has increased and, in order to maintain groundwater quality in the catchment, Agrivair had to expand its programme to non-farm municipal lands. Agrivair now manages 300 ha of city parks, 200 ha of golf courses, a horse racing track, and the Vittel thermal park.

Impact on biodiversity

Although protection of biodiversity was not the objective of the initial programme, in particular the new challenges as described above led the programme to incorporate practices that benefit biodiversity. For instance, herbicides have been replaced by thermal weeding in school yards, railroad tracks, airport grounds, paths and parking lots. Some farms have turned to organic dairy production, and Vittel established 140 hectares of organic apple orchards. Ladybirds, a natural predator of crops pests, are bred in Agrivair laboratories and released at strategic times during the year. Biodiversity is also encouraged through the planting of flower rows and the establishment of bird houses and bird refuges. Agrivair personnel work with farmers to plant and maintain 40 kms of hedgerows to keep a balanced population of foxes and birds of prey (the natural predators of field mice that ravage crops).

The performance of the programme is evaluated through a strict monitoring programme. Water quality from surface and groundwater is monitored daily. On-farm practices are also monitored and Agrivair has access to all farm accounts (a clause in the contract between farmers and Vittel) to ensure compliance with farming practices. An observation network monitors all activities in the catchment area to quickly identify pollution risks and preventive measures are taken when required. Biodiversity, especially insects, bird populations and diversity of wild flowers is also regularly monitored. Plans for the future include the expansion of organic agriculture, which will improve biodiversity in the area even further.

Replicability

Nestlé Waters expanded the approach to a total of 10,000 hectares by including the contiguous Contrex/ Hepar catchment. Forest is a major land use in this catchment and Agrivair introduced a forest management programme which aims to maintain a balance of trees to maximize nitrate uptake.

The scheme was replicated in the Perrier spring in Vergèze in southern France where organic wheat and wine were successfully introduced. In this drought-prone area, fire prevention measures are a key component of water protection as destruction of the vegetal cover affects surface water run-off and infiltration patterns, and chemicals used by fire fighters affect groundwater quality. In collaboration with l'Institut Méditerranéen du Patrimoine Cynégétique et Faunistique (Mediterranean Institute for Hunting and Wildlife Heritage), Nestlé established a research programme to protect water resources, prevent fires and safeguard wildlife habitat in an area (40 ha). As the Perrier company has recently experienced financial difficulties, the long-term continuation of the agricultural component of its water protection programme is not clear.

Nestlé Waters further replicated the approach in Argentina, in partnership with a municipality where a source spring was located. Evian, a subsidiary of Danone, has adopted a similar approach (and entered into partnership with the Ramsar Convention to protect wetlands in their catchments of operation).

Lessons learned

Establishing PES programmes is a complex undertaking. There are no blueprints or quick fixes. Programmes must be adaptive and innovate constantly as new threats to water quality appear.

The ability to maintain farmers' income at all times and finance all technological innovation was important, but it was not sufficient. The primary reasons for the success of the programme were

not financial. The attention given to the complex interactions between technical, economic, social, legal, geographic, sociological and political issues (land market, debt cycle, labour constraints, future of farm family, role of farmers unions) was key to understanding farmers' livelihood strategies.

The mediation and communication provided by the multidisciplinary research team allowed the company to establish a dialogue with farmers based on trust. It enabled the identification of a set of incentives and practices that were mutually acceptable.

An important reason for success was that, in contrast to annual European subsidies, annual contracts offered were long-term (valid for 30 years) and provided more income security while engaging in innovation.

It was necessary for all farmers to participate in order to eliminate the threat of contamination of the groundwater. In some situations, the approach may not be feasible if the number of farmers is very large and there is disagreement within the group. In such a case, the cost of payments and the risk of not being able to target a critical mass of farmers in sensitive areas may be too high.

There is a business case for private sector participation in financing the protection of ecosystem services. The Vittel scheme has demonstrated that food production and biodiversity can be reconciled and the multiple uses of agricultural landscapes can be enhanced or restored. To succeed, a broad range of partnerships was indispensable, involving individual farmers, the National Agronomic Research Institute, the Water Catchment Agency and the municipalities.

The case also demonstrated that local economic development and conservation can go hand in hand. In Vittel, protecting water quality and biodiversity meant protecting economic activities that provided the bulk of employment in an area which had suffered from with high unemployment rates.

Sources: Benoit (2008); Nestec Ltd. Environmental Affairs Department (2003); Nestlé (2002); Pierre (2009); Perrot-Maître, D. (2006); Perrot-Maître, D. (2010).