

# Collective action as a tool for water quality management in agriculture: the case of co-operative agreements in French drinking water catchments

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## Abstract

Nonpoint source pollution from agriculture is a major threat to the quality of surface and ground waters in the European Union (EU) context. The EU Water Framework Directive (WFD), adopted in 2000, sets the objective of achieving good water status for all bodies of surface waters and groundwater by 2015. As part of the implementation process of the WFD in France, a national regulation requires the protection of water in 500 drinking water catchments identified as particularly threatened by non-point source pollution. In this frame, voluntary cooperation between drinking water suppliers and agricultural stakeholders is promoted for the definition and implementation of measures targeting diffuse pollution from agriculture.

This study aims at identifying the factors affecting collective action involving public/private water suppliers and agricultural actors for the control of nonpoint source pollution from agriculture in the French context.

Transaction cost economics are used to assess the benefits and costs of co-operative agreements for participating stakeholders. Transaction costs associated to collective action correspond to the information collection costs, bargaining and decision-making costs and the monitoring and enforcement costs of agreements (McCann, 2005). To identify the factors affecting the benefits and costs of collective action, we then use the SES (Social-Ecological System) framework (Ostrom, 2009; McGinnis and Ostrom, 2011).

The analysis relies on a two-step methodological approach. First, a literature review and interviews with 12 stakeholders of the water and agriculture policy fields at the national and river basin levels led to the identification of a first set of factors likely to affect collective action. In the second stage of the study, in-depth case studies of collective action in six drinking water catchments were realized, on the basis of 36 interviews with local stakeholders involved in co-operative agreements.

The in-depth analysis of collective action in the six study areas led to the identification of the factors affecting the achievement of cooperation between water suppliers and agricultural stakeholders: (i) the characteristics of the hydro-geological and agro-ecological systems in drinking water catchments, (ii) the characteristics of the stakeholders involved and (iii) the terms of co-operative agreements.

The nature of market incentives and the existence of public support at the water basin and national levels were identified as determining strongly the emergence and sustainability of cooperative agreements. The importance of these context conditions can be related to the public good nature of non-point source pollution control by farmers. In the presence of few direct economic incentives for water quality improvement, the success of collective action substantially depends on external economic incentives (e.g. the existence of a demand for “green” agricultural products) and public support.

**Keywords:** co-operative agreements; non-point source pollution; water drinking catchments; transaction costs; SES framework