

Interactive comment on “Co-operative agreements and the EU Water Framework Directive in conjunction with the Common Agricultural Policy” by I. Heinz

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Thanks to Referee 1 for reading and commenting the manuscript.

5) Are the results sufficient to support the interpretations and conclusions? (Author217;s answer:) According to the outcomes of the research project, which is the main reference of the article, the effectiveness of mandatory regulations (such as legal commitments) can be enhanced by CAs. This means that regulations remains needed to implement environmental laws, such as water acts. In some cases, however, water authorities accept and even foster voluntarily-agreed commitments for farmers in statutory water protection zones and refrain from enforcing compulsory rules. Au-

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thorities have learned that the effectiveness of regulations can be more effective by establishing CAs, because the changes of farming practices can be better tailored to the site-specific conditions at a water catchment area. A further reason is that many water suppliers are interested in preventative rather than in remedial measures, such as water treatment. An example is the CA Stevertalsperre, where the activated carbon treatment is not more needed since 2005.

13) Should any parts of the paper (text, formulas, figures, tables) be clarified, reduced, combined, or eliminated? (Author8217;s answer:) Please consult the answers made below under the headings: Note: Section 4: Page 1610, line 1-2:

Specific comments

Section 2: Is there a clear proof for higher effectiveness of CAs compared to mandatory standards, or is it an opinion? (Author8217;s answer:) Indeed, it is not easy to separate the impacts of CAs from other influencing factors (e.g. ban of atrazine). Wherever possible, statistical methods (e.g regression analysis) may be used to obtain significant results: Bach, M., Hoch, A.S., Friedrich, S., Frede, H.-G. und Berthold, G.: Wirksamkeit und Kosten von Kooperationen zur grundwasserschonenden Landbewirtschaftung in Hessen. Wasser 8211; Abwasser, 148 (2007) Nr. 5, 358 8211; 363. (Page 1603, line 20. Added sentence:) There are many further examples. In the German Bundesland Hesse, the data of 671 water works were assessed in a recent research project (Bach, M. et al., 2007). By using the regression analysis applied to 11 water works regarding the nitrate pollution of groundwater a trend of decreasing or significant slowing down of nitrate concentration could be proved in 5 cases. In further 3 cases, a decrease of nitrate concentration could be observed. As the authors point out, CAs are definitively a successful instrument for groundwater protection, even though the long time required to determine improvements in water quality currently does not allow to obtain similar results from other cases. (Page 1603, line 20.Added sentence:) Another study assessing systematically the performance of CAs were carried out. (Page 1615, line 19. Added reference:) Fohrmann, R.: Entwicklung eines einheitlichen Verfahrens zur Erfassung

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und Bewertung der Auswirkungen von Vereinbarungen zwischen Landwirtschaft und Wasserwirtschaft auf die Gewässerqualität in Nordrhein-Westfalen. Mülheim an der Ruhr, IWW Journal 27, 2007, 10-11. In this study covering an about 20,000 ha agriculturally used area statistically significant influences could be found.

There are different aspects influencing this conclusion, among others: (Page 1599, lines 11-14. Sentence modified:) Because regulatory approaches have difficulty in tackling pollution from non-point sources, both water suppliers and authorities rely increasingly on voluntary agreements. (Page 1599, lines 12-14. Added sentences:) This does not mean that compulsory rules become needless. Special rules are enforced in any case, for instance, ban of hazardous pesticides. Compulsory rules are applied if CAs do not work. Local authorities are often announcing their application to apply pressure on farmers to meet voluntary agreements. Principally, mandatory regulations, such as water acts, serve as legal framework to implement standards or limit values through compulsory and voluntary commitments.

(Page 1607, line 22-25. Added sentences:) A further problem may be seen in windfall profits for changing production methods that would have been occurred also without financial support. However, as the cases analysed indicate, such windfall profits are probably less than the economic benefits farmers received from CAs. Water companies make usually great demands on farmers as there aim is to prevent or reverse water pollution. Agricultural experts payed by them are commissioned to monitor farmers' behavior.

(Page 1607, line 22-25) In addition, authorities are controlling the compliance with mandatory commitments. (Author's answer:) As mentioned on page 1609, lines 1-5, and on page 1611, lines 12-19, the obligations agreed upon in CAs often go beyond mandatory requirements. (Author's answer:) As mentioned on page 1610, lines 6-16, mandatory requirements, including standards, must be considered by farmers as a condition for being financially assisted in CAs. (Author's answer:) The compliance with both mandatory and voluntary standards can be facilitated by

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CAs, because farmers are encouraged to meet contractually agreed commitments due to economic incentives, effective monitoring and self-control mechanisms.

Note: (Page 1612, lines 14-19. Added sentences:) In particular, the reports according to Art. 5 WFD can provide information for setting the objectives relevant for implementing the rural development measures related to water problems. Furthermore, according to the Articles 38 and 39 of Regulation 1698/2005 support shall be granted to farmers for costs incurred and income forgone resulting from disadvantages in the areas related to the implementation of WFD and other relevant EU Directives. Payments cover only those commitments going beyond mandatory requirements. The impacts of the financial supports provided is influenced inter alia by the extent to which the supported measures are tailored to the local conditions and environmental needs. Advisory services for farmers how to apply these measures can also enhance considerably the effectiveness of such supports. (Page 1610, lines 1-3. Modified sentence:) Agricultural products that have adverse effects on the aquatic environment can be reduced without losses of direct payments. (Added sentence:) Nevertheless, changing farming practices can lead to income losses due to increased costs or reduced sales revenues. (Modified sentence:) Furthermore, the EU Regulation 1782/2003 is playing an important role (Institute for European Environmental Policy, 2005). (Page 1612, line 14. Modified sentence:) In light of the statements made above CAs can contribute directly and indirectly to achieving simultaneously the objectives of the WFD and CAP policies in numerous ways (Box 3) (Heinz et al., 2002a).

Section 4: (Page 1610, lines 22-23. Added sentences:) As far as the Statutory Management Regulations associated the cross compliance regulation address water-related Directives (such as the Nitrate Directive), the cross compliance regulation can contribute to implement the WFD aims. The same can be applied to the good agricultural and environmental conditions (GAEC) that are defined by the Member States. (Page 1611, lines 10-11. Modified sentence:) Water companies can provide farmers with financial assistance and advisory services in complying with statutory

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commitments, particularly related to the cross-compliance regulation (EU Regulation 1782/2003), even though this regulation focuses on mandatory commitments and may be less compatible with CAs. (Page 1612, line 12. Added sentence:) On the other hand, particularly with regard to the cross compliance regulation practical difficulties may emerge as the requirements are defined normally at a central level, while water protection rules aim to tackle regional or local problems.

Page 1610, line 1-2: (1610, lines 2-3. Modified sentence:) This is because agricultural products that have adverse effects on the aquatic environment can be reduced without losses of direct payments. (Page 1610, lines 2-3. Added sentence:) However, changing farming practices can lead to income losses due to increased costs or reduced sales revenues. (Page 1609, line 27. Modified sentence:) With regard to the CAP reform, the 8216;decoupling8217; (i.e. separation) of direct payments to farmers from the volume of production will have positive impacts on water quality (even though several Member States have only partially decoupled certain direct payments).

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 4, 1593, 2007.

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