



Farmers' perceptions of Scotland's diffuse water pollution regulations in the Eye Water and Pease Bay priority catchment

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Introduction:

Water is essential to sustain life however poor water quality negatively impacts ecosystems, human health and the economy. For years, point-source polluters were targeted to reduce their effluent while now it is recognized non-point or diffuse pollution is a higher concern. It is thought larger polluters masked diffuse pollution making this a challenge to control because regulations cannot easily monitor nor place certain blame on the polluter (Campbell, 2004). Even though these contaminants maybe less damaging than point source pollution in terms of concentration, the combination of different substances is worrisome (Howarth, 2011).

This research explores the implementation of agricultural diffuse pollution regulations ten years after the Water Environment and Water Services (Scotland) Act 2003 (WEWS Act), an act given to protect the water environment in Scotland. The research highlights the environmental and socio-political issues of controlling diffuse pollution. The first aim attempts to understand farmer perceptions of diffuse pollution and the regulations imposed. The second aim is to understand the participation between farmers and the regulatory body in mitigating diffuse pollution. There are several objectives delivering these aims; exploring farmer perceptions on diffuse pollution regulations and their participation in mitigating diffuse pollution, gathering information on how Scottish Environmental Protection Agency (SEPA) participates with stakeholders, and finally assessing the effectiveness of diffuse pollution regulations through the perception of stakeholders.

Methods:

The research presented in this paper includes an interdisciplinary approach by combining a literature review and semi-structured interviews. The literature review explains the impacts of diffuse pollution from agriculture, Scotland's regulations authorized for its control, and stakeholders' perceptions. It showcases numerous journals and policy reports explaining the necessity to mitigate diffuse pollution and the limitations regulatory science can impose. In addition, socio-political issues are addressed throughout to expose its importance of implementing integrated water resource management. A case-study was used to gather perspectives of a priority catchment already proceeding with implementing diffuse pollution regulations. Eye Water and Pease Bay Catchment area was used to conduct semi-structured interviews to gain this insight. In addition, governmental and environmental experts were interviewed to balance the discussion.

Results and Discussion:

Semi-structured interviews were analyzed using inductive reasoning to identify themes within the transcripts and then categorized by means of theoretical coding. The emergent themes were then considered on the concepts written in the literature review following a grounded theory approach.

The field findings show farmers have a good understanding of what diffuse pollution is and where it originates. However, some farmers do not fully recognize the negative impacts of their activities reasoning they have good farming techniques. Moreover, other studies found farmers un-persuaded by the severity of diffuse pollution and are substantially contributing to its impact (Gunningham & Sinclair, 2005). When farmers were asked if they trust scientific information given, many responded that they must because one cannot dispute if there is faecal bacteria in the water. Although farmers have doubts and are skeptical since many other variables such as weather and the watercourse hydrology can cause diffuse pollution to have a greater impact.

Researchers have shown farmers and stakeholders lack trust in governmental officials (Barnes et al., 2009; Kraft et al., 1996). The field results show majority of farmers interviewed shared negative expressions of SEPA such as the words: ‘the enemy’, ‘badly’, ‘not very well’, ‘weary’, and ‘an imposition’. The reasoning behind the farmers’ comments included not liking regulations since they are an obstruction of their business, or they are suspicious of SEPA's activities, or they are holding onto past impressions of SEPA. Despite the negative expressions, most of these comments were over-shadowed with explanations that they are now speaking because they earned respectable recognition for completing mitigation. This was found as a result of SEPA’s increased effective collaboration, educated personnel and taking a more advisory approach towards controlling diffuse pollution.

A concerning finding is the inequality of farmers not complying with regulations. Some farmers expressed they were frustrated that they paid for mitigation while others have been able to get away by doing nothing. Throughout the interviews and research, no reasons were discovered as to if or why these non-compliant farmers were not contributing to the mitigation efforts. Although it can be considered from the interviewee's comments, the reasons are the lack of acceptance to the problem and are historically negative towards SEPA. However, even if there are good reasons why, farmers and other stakeholders need to be assured everyone is contributing.

Conclusion:

Referring back to the research aims, farmers' perception of where diffuse pollution originates from is well understood. However, understanding the importance of its negative impacts is insufficient notwithstanding the literature explaining the impacts towards ecosystems, human health and financial contributions made by water users. This perception is possibly due to the lack of trust in SEPA and scientific information regarding the success of mitigation techniques and water quality parameters.

The second aim of this research is to understand the participation between farmers and the regulatory body in mitigating diffuse pollution. In analyzing the literature review and interviews, it is recognized that SEPA and farmers are improving their participation with one another since Scotland's implementation of the Water Framework Directive. Specifically, the type of characteristics regulatory personnel have enacted is principal in influencing behavior change. While the Eye Water and Pease Bay Catchment Area has seen improvements in cooperation, the inequalities addressed are concerning. The current improvements between farmers and stakeholders could be lost if these inequalities are not addressed.

Tackling diffuse pollution requires a holistic approach where stakeholders in the watershed contribute towards reducing his or her runoff in order to sustain healthy water quality for future generations.

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