



## Time to look for evidence: Results-based approach to biodiversity conservation on farmland in Europe



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### ABSTRACT

Increased use of annual payments to land managers for ecological outcomes indicates a growing interest in exploring the potential of this approach. In this viewpoint, we drew on the experiences of all schemes paying for biodiversity outcomes/results on agricultural land operating in the EU and EFTA countries with the aim of reviewing the decisive elements of the schemes' design and implementation as well as the challenges and opportunities of adopting a results-based approach. We analysed the characteristics of results-based schemes using evidence from peer-reviewed literature, technical reports, scheme practitioners and experts in agri-environment-climate policy. We developed a typology of the schemes and explored critical issues influencing the feasibility and performance of results-based schemes. The evidence to date shows that there are at least 11 advantages to the results-based approach not found in management-based schemes with similar objectives, dealing with environmental efficiency, farmers' participation and development of local biodiversity-based projects. Although results-based approaches have specific challenges at every stage of design and implementation, for many of these the existing schemes provide potential solutions. There is also some apprehension about trying a results-based approach in Mediterranean, central and eastern EU Member States. We conclude that there is clear potential to expand the approach in the European Union for the Rural Development programming period for 2021–2028. Nevertheless, evidence is needed about the approach's efficiency in delivering conservation outcomes in the long term, its additionality, impact on the knowledge and attitudes of land managers and society at large, development of ways of rewarding the achievement of actual results, as well as its potential for stimulating innovative grassroots solutions.

### 1. Introduction

In the words of McIntyre et al. (1992), the 'struggle to maintain biodiversity is going to be won or lost in agricultural systems'. For terrestrial systems globally, agricultural expansion remains the most prominent threat, while in Europe, increased specialization and intensification, and abandonment of high nature value (HNV) farmland (Oppermann et al., 2012) threaten biodiversity on farmland (Stoate et al., 2009; Poláková et al., 2011). As a result, a particularly high proportion of semi-natural habitats, and associated species, that are

dependent on HNV farming systems and are protected under the Habitats Directive have an unfavourable conservation status (EEA, 2015). Meaningful engagement of farmers remains the key to the fate of biodiversity in the long term (de Snoo et al., 2013).

In the European Union (EU), by far the largest source of funding for practical nature conservation is being delivered through the agri-environment-climate schemes (AES) implemented under the Common Agricultural Policy (CAP) (Poláková et al., 2011). A review of monitoring evidence suggests that most AES lead to biodiversity benefits, but the performance of some has been unsatisfactory (Batáry et al.,

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**Table 1**  
Typology of the payment schemes for biodiversity on agricultural land in Europe. More specific information on all results-based schemes by type and country of implementation is in Supplement Table A.1.

Scheme type	Category	Main characteristics	Basis for payment	Example schemes
Results-based payment schemes	Pure results-based	No management actions are either specified or required	Solely biodiversity results measured with indicators: single payment threshold, stepped payment thresholds or continuously variable payments	Species-rich grasslands in Brandenburg, Germany: single payment for at least four indicator plant species. Semi-natural grassland in Lower Saxony, Germany: payment for at least 4 indicator species and top-up payment for additional 2 species. Conservation performance payments in North Sweden: payments according to the numbers of wolverine and lynx offspring
	Hybrid: Results-based with baseline management requirements	Holders have to undertake some defined management actions (or abstain from certain activities) as a baseline requirement of a results-based contract	Single or stepped payment thresholds payment is wholly dependent on biodiversity results, measured using one or more environmental indicators; management actions have to be undertaken as an unpaid condition	Species-rich grasslands in Baden-Württemberg, Germany. Payment for at least 4 indicator plant species; additional management requirements (e.g. no early silage cuts).
	Hybrid: Management-based with an optional results-based top-up	Similar to the above but the contract is management-based and the results element is optional	Basic payment for management actions and an extra (top-up) payment if results are achieved	Pasturing contracts in Solothurn, Switzerland: basic payment for management requirements, in addition several steps for results based on judgement of species richness, structural richness and difficulties of management. Most of biodiversity schemes in AES programmes
Management-based schemes	Management-based schemes	Holders only have to undertake specified management actions or abstain from certain activities	Payments linked to management actions having the conservation of biodiversity as their primary purpose	
	Farming system oriented schemes	Same as above	Payment linked to defined farming systems known or believed to produce biodiversity benefits.	Schemes that promote organic farming or seek to maintain High Nature Value Farming

2015). The prescriptive nature of the AES, inflexible payment conditions, poor targeting, and a low priority put on actual results have been identified as some of the key reasons for poor effectiveness (Burton and Paragahawewa, 2011; Batáry et al., 2015). New approaches to delivering biodiversity objectives on farmland that encourage farmers to actively engage with the goals of environmental management are needed alongside the existing ones. These include support to voluntary non-monetary activities (Santangeli et al., 2016) and making payments conditional on delivering ecological results (Zabel and Roe, 2009; Burton and Schwarz, 2013; Reed et al., 2014).

Making public or private payments conditional on the delivery of results, that is ‘ecological goods and services’, has been actively explored under the framework of payments for ecosystem services (Gerowitt et al., 2003). The possibilities for integrating the ecosystem services approach into AES have recently been emphasized, alongside discussion on the strengths and weaknesses of this type of approach (Meyer et al., 2016; Reed et al., 2014; Matzdorf and Meyer, 2014). The focus on outcomes that is implied in such payments makes the process of design and implementation reliant on adaptive management and the capacity of land managers for innovation. This, in turn, requires the development of multi-party governance systems and experiment-driven environmental policy (Hiedanpää and Borgström, 2014). Refining policy tools and delivery requires a cultural change in the way that farmers engage with policy on the ground involving, inter alia, clearer goals and results orientation (Buckwell et al., 2017). In their review Burton and Schwarz (2013), made a first attempt at synthesizing evidence from the result-oriented schemes in Europe (12 at that time) and focused on the cultural and social change these may promote and require. The situation in the field progressed rapidly since then.

In this viewpoint we focus on the results-based payment (RBP) approach applied specifically to biodiversity on agricultural land across Europe, including extensive livestock systems (e.g. reindeer herding in forest-tundra areas of Lapland) and other HNV farmland (e.g. traditional orchards). We present a typology of the existing schemes that remunerate land-managers, mostly farmers, for biodiversity outcomes in the EU and European Free Trade Association countries (Norway and Switzerland), explore critical issues influencing the feasibility of the approach in the design and implementation stages, and discuss the opportunities and challenges of the approach. The viewpoint largely draws on work commissioned by the European Commission to review the advantages and challenges of adopting the RBP approach for the protection and enhancement of biodiversity (for full report see Allen et al., 2014).

As part of the study, we analysed the characteristics of all RBP schemes operating in Europe (within and outside AES agreements) and 20 responses from questionnaires distributed to key practitioners involved in the design and implementation of these RBP schemes in 17 countries. Discussions with over 50 key experts in the field of agri-environment-climate policy and ecological indicators also aided the interpretation of the above evidence. Drawing from insights in the literature on participatory and experimental policy and on payments for ecosystem services, we discuss some of the opportunities and challenges of the RBP approach and suggest ideas for essential future research and policy development.

## 2. Implementation of payment-by-results approach in Europe

Though a multitude of schemes that involve payments for ecological services exist worldwide, there is no single agreed definition of what constitutes a ‘results-based payment scheme’ for biodiversity (other terms used are ‘payment by results’, ‘outcome focused’, ‘performance payment’, see Burton and Schwarz, 2013). We reviewed all schemes that, to varying degrees, financially reward or remunerate land managers for delivering verifiable biodiversity achievements on agricultural land. There is a range of approaches to delivering biodiversity objectives, from conventional management-based approaches to those that

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