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ENRD Thematic Group (TG) on sustainable management of water and soils

Result-based payment schemes (RBPS) for Soil and Water in Europe

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1 Introduction

1.1 Scope of the paper

This paper has been prepared on behalf of the [ENRD TG on the sustainable management of water and soils](#) to inform discussions and to:

- Explore how RBPS might be used to address soil and water objectives within RDPs.

It is set in the context of the current EAFRD Regulations, rules and Commission guidance documents, and illustrated by examples from the 2014-20 RDPs and current Commission-funded RBPS pilot schemes, but is also intended to inform the Group’s discussions on the possible role of RBPS within the CAP beyond 2020. The paper builds on the working document on RBPS produced for the second TG meeting and the outcome of the [second](#), [third](#) and [fourth](#) TG meetings held, respectively, on 15 December 2017, 22 March 2018 and 16 May 2018. It also integrates the lessons learnt from the projects and examples provided by TG members.

The paper begins with a summary of the key characteristics and benefits of RBPS, illustrated by examples from three MS, then explains how to assess the feasibility of using RBPS to achieve soil and water objectives, followed by a discussion of the key issues to consider when designing and implementing RBPS, highlighting where these differ from management-based payment schemes (MBPS). It concludes with suggestions for improving policy tools that support the use of RBPS for soil and water.

1.2 What do we mean by Result-Based Payment Schemes (RBPS)?

An RBPS is an agri-environment or similar scheme where all (or part) of the annual payment per hectare depends on achieving a threshold value of one or more environmental indicators (the ‘result indicators’). These are verified each year by the farmer and controlled by the paying agency, both using the same detailed protocol which is defined in the rules of the scheme. The farmer is free to choose how to achieve that result, and there is no requirement, verification or control of the land management used to achieve the result, because achievement of the result indicator is the basis for payment. One way of visualising this is to think of the result indicators as an environmental ‘crop’, where the quantity and quality of the results each year determines how much the farmer is paid – just as with a wheat crop, except that the environmental crop stays on the farm. In other words, an RBPS is similar to a targeted MBPS under the RDP agri-environment-climate measure, as the figure below illustrates.

Comparison of RBPS and MBPS targeting soil and water objectives

RBPS	MBPS
✓ clearly defined objectives for specific environmental services from soils and water systems on farmland	(✓)
✓ targeted effectively (e.g. at sub-catchment, soil types or farming systems in a clearly defined zone)	(✓/X)
✓ € for presence of measurable indicators of results	X
X € (flat rate) for prescribed farm management	✓
✓ If EAFRD funding rules apply: <ul style="list-style-type: none"> • CAP baseline for payment calculation • €/hectare/annum under agri-environment-climate measure (M10.1) • 5 year contracts (but can be longer) • may be used with environmental investment (M4.4) 	✓

RBPS is used to address the same environmental objectives as the more familiar management-based agri-environment schemes (MBPS) but RBPS is a radically different concept. Whereas MBPS pay farmers for complying with detailed instructions on how to manage their land, irrespective of whether that actually achieves the intended objective, RBPS pays for outcomes on the ground. Therefore, RBPS payments can be more clearly linked to achievement of the specific environmental objectives than is the case for MBPS. So far, there seem to have been very few RBPS identified that address soil and water objectives directly. Most existing RBPS schemes are targeted primarily at biodiversity objectives, but these can also have benefits for soils and water (for example, reduced erosion risk and improved carbon sequestration under permanent grassland habitats, and reduced inputs for multi-annual wildlife crops grown on arable land). However, there has been no comprehensive review of RBPS schemes in the EU since 2014, and the Thematic Group is aware that some new RBPS soil or water schemes have been set up since then.

RBPS are increasingly being used to replace existing MBPS under the agri-environment-climate measure, or as an alternative or addition to an MBPS. In some cases, 'hybrid' schemes have been developed, with both result-based and management-based requirements. Some RBPS are mainstream RDP schemes using M10.1, while others are funded by state-aid or the EC (LIFE and DG Environment research funds, for example).

RBPS may be used in a standalone scheme, as a top-up to an MBPS or a result payment integrated with an MBPS but verified and controlled separately (sometimes called a hybrid scheme). The key attribute of an RBPS is a contract which requires the measurement each year of a result indicator (not a management practice), and the value of the result indicator determines the payment. The examples below of current RBPS schemes show how this works in practice, with the result indicators shown in bold.

Box 1: Water quality RBPS/MBPS hybrid agri-environment-climate scheme (M10.1) in Flanders, Belgium

This agri-environment-climate scheme in the 2014-20 RDP replaces a MBPS water quality scheme in the 2007-13 RDP, which required reductions on fertiliser use. That scheme had to be discontinued because it no longer met the new EAFRD verification requirements; also, farmers were finding it difficult to fulfil the administrative requirements for record keeping.

The aim of the new scheme has been widened to include soil objectives:

- Safeguard and improve water quality by reducing the risk of nitrates leaching from arable land;
- Reduce the risk of soil erosion; and
- Encourage farmers to improve the levels of organic matter in their soil.

The RBPS result indicator is the residual soil nitrogen at the end of each growing season in *all* the fields on the farm, and the threshold for payment is a residual soil nitrogen level on all fields (grassland and arable) which is at least 4 kg N ha⁻¹ yr *below* the lowest threshold value set by Flemish regulations for permissible soil nitrogen levels on farmland. The indicator is measured by the farmer (and controlled by the paying agency) in soil samples taken by the farmer from each field, which are analysed by an approved laboratory.

The MBPS requirements and controls concern the types of arable crop, because the risk of nitrate leaching (and also soil erosion) varies for different crops (e.g. potatoes are a much higher risk crop than cereals). Farmers in the scheme must grow no less than four main crops, of which three must be low-risk crops other than grassland, and the low-risk crops must occupy at least 90% of their arable land each year.

There are also compulsory technical advice and soil testing requirements. Before signing the agri-environment-climate contract, the farmer must have on-site advice from a specialist farm adviser, who will explain the requirements of the scheme and discuss how these will fit with the farm's crop rotation system and nutrient management planning. In the first year of the contract the farmer also has to carry out a soil analysis for carbon content (organic matter) and pH (acidity). These data are useful for the farm's nutrient management planning but are not part of the result indicator. The payment of €245/ha/year applies to the total area of low-risk arable crops on the farm each year (the precise area varies a little from year to year because of the crop rotation), but the result indicator must be achieved on *all* fields, not just these arable fields. This ensures that the farmer does not 'compensate for' reducing nutrient inputs on one part of the farm by increasing inputs elsewhere.

Box 2: Winter bird food and pollen/nectar plots on arable land – pilot RBPS scheme in England, UK

2016-19 pilot by Natural England (government conservation agency) funded by DG Environment

There is strong evidence that these two options are key to the survival of farmland birds and pollinators. When they are established and managed well, these wildlife crops provide vital food resources at key times of year which ultimately affects the species' ability to breed successfully and ensure that populations grow.

This pilot RBPS scheme is running alongside a well-established MBPS M10.1 scheme with the same biodiversity objectives. The aim of the pilot is to test the environmental cost effectiveness of the RBPS approach and assess farmers' attitudes to it. Payment rates for the RBAPS plots are tiered and linked to the result indicators which show how well the sown species have established and grown. Only those species that are known to deliver the necessary seed or nectar resources will be counted towards the indicator.

The result indicator for the bird food plots (which are sown afresh each year but must be retained until the end of the winter) **is a threshold number of seed heads of specific crops;** for the **pollen/nectar plots** (which take some time to establish and are sown then left in place) **the result indicator is based on the presence of the species that were sown, and also (from the second year) the percentage cover of the sown species.**

Early results show that farmers who have experience of participating in both the MBPS and RBPS versions of the scheme are putting in additional management effort to achieve the RBPS indicators.

Box 3: Efficient use of water – RBPS/MBPS hybrid agri-environment-climate (M10.1) in Portugal

The aim of this agri-environment-climate scheme in Portugal 2014-18 RDP is to improve efficiency of water use and to reduce water consumption compared to a reference level.

The RBPS result indicator is the measured water consumption of the irrigated area of the farm, and the required threshold value is at least 7.5% below a reference scenario established by the National Irrigation Authority for the different irrigated crops and methods of irrigation under pressure for the three main Portuguese agro-climatic regions.

The MBPS requirements include:

- Use only sprinkler, localised (micro sprinkler, drip irrigation) or below ground irrigation systems;
- Implement an irrigation plan based on recommendations made on the basis of the weekly water balance, using a rain gauge and taking into consideration the type of irrigation equipment, soil type, climate and vegetative phase of the crop to be irrigated;
- Define and implement a fertilisation plan; and
- In the first, third and fifth years of the contract, ensure that the irrigation equipment is inspected by an accredited authority and implement the recommendations of the inspections.

Issues with delivery of the scheme have included the need to train technicians (this was done through specialised courses in the first phase of implementation). Farmers have improved their efficiency of water use, but equipment to measure the water consumption at farm level is expensive and the paying agency controls focused on administrative issues rather than on results. However, the large data sets generated will be useful in drawing technical conclusions on water productivity.

Common features of these three examples include:

- The objective of changing farmer behaviour to adopt more sustainable long-term approaches to water and soil management;
- The importance of tailored farmer training and on-farm advisory services; and
- The role played by specialist skills or services (for laboratory analysis of soil samples in Flanders, for botanical assessment in England and for inspection and certification of irrigation equipment in Portugal).

2 Assessing the feasibility of RBPS for soil and water objectives

2.1 Why choose RBPS for soil and water?

The most likely scenario for many RDPs will be to consider replacing all or part of an existing MBPS for soil and/or water objectives with an RBPS, because this would be more environmentally cost effective in terms of the impact achieved. M10.1 RBPS payments carry less 'deadweight', because farmers are free to use their farming skills, professional judgement and local knowledge to target land management changes at those locations where there is likely to be greatest impact on the result indicators. Soils vary widely, even within one field, each with different properties and responses to management practices, which the farmer will be familiar with.

A well-designed RBPS scheme could encourage farmers to take ownership of improving soil and water management on their land. Advisory and technical support as part of the scheme should lead to farmers having a better understanding of the long-term benefits for productivity and for the business of resource management (particularly in the context of adapting farming to climate change). For example, many current approaches to reducing the risk of soil erosion simply address the consequences of the problem (e.g. buffer strips to capture the soil just before it enters a watercourse), but a more rational objective would be to maintain the soil in place within the field, where it can continue to function as an irreplaceable factor of agricultural and forest productivity.

Also, RBPS can more easily meet the strengthened EU requirements for verification of agri-environment-climate payments related to fertiliser use in 2014-20 schemes, following the European Court of Auditors' criticism of error rates. For example, under the 2014 EAFRD rules, MBPS agri-environment schemes can include requirements for fertiliser reduction only if the requirement is a zero-fertiliser application. Schemes requiring proportional reductions in rates of fertiliser application are no longer acceptable¹.

2.2 Is it possible to define clear objectives for RBPS soil and water, and on what scale?

The water and soil objectives which might be relevant (and are currently addressed by many MBPS) include:

- **Reducing diffuse pollution of surface and groundwater** from leaching and runoff from agricultural land – particularly of nitrogen and phosphorus compounds from mineral fertilisers and manure, but also of biologically active substances used in herbicides, pesticides and (in a few cases) veterinary products;
- Reducing **flood risk** for settlements and **buffering peak flows** by improving infiltration and storage of water in critical parts of catchments;
- Making **more efficient use of water on the farm, particularly from abstraction for irrigation**;
- Reducing the **risk of soil erosion** (by wind and/or water); and
- **Improving soil organic matter (SOM) content of mineral soils**, particularly in arid areas, and protecting the **carbon sink and sequestration potential of peatland soils**.

Every RBPS must be designed for the specific context in which it will operate. Although an RBPS may have the same broad soil and water objectives as those of existing MBPS scheme (which it may replace or complement) the RBPS will require more detailed and specific objectives for soil and water that take into account the specific context and issues within the target area and farming systems. Without this it will not be possible to choose effective result indicators and, as a consequence, the scheme runs the risk of 'paying for the wrong thing'.

Before finalising the soil or water objectives of a results-based scheme it is good practice to consider what effects the achievement of this objective might have on other environmental objectives within the target area or farming systems. There may be benefits for other objectives (for example, for GHG emission from improved soil functionality), but it is worth checking for other, unintended and possibly negative effects too.

2.3 What types of result indicator might be suitable for soil and water objectives?

In an ideal world a RBPS would pay directly for achieving the objective, but often this is not feasible. Result indicators are used as proxies for the soil or water objectives of the scheme.

Well-chosen indicators are:

- Reliably representative of the specific soil or water objective(s) and based on scientific data from the area where the scheme will apply;
- Present consistently in target farmland area;

¹ For details see DG AGRI Guidance document: technical elements of agri-environment-climate measure in the programming period 2014-20 (version November 2014). Brussels.

- Easily identified and measurable by both farmers and paying agency inspectors, using a simple, reliable and unambiguous methodology;
- Compliant with funding rules and control and verification requirements for EAFRD;
- Sensitive to changes in agricultural management within the timescale of the contract but otherwise stable over time; farmers must have confidence in the result indicators and the reliability of the protocols for measuring them;
- Unlikely to be influenced by external factors beyond the control of the land manager; and
- Not achieved easily by means other than agricultural management.

The box below explains some of the reasons underlying the choice of indicators in RBPS schemes.

Examples of effective indicators

In the Flemish water quality example (**Error! Reference source not found.**) the aim is to reduce nitrogen pollution of watercourses; although nitrate levels in watercourses could be measured, any changes would not be attributable to specific farms, and might be influenced by non-agricultural factors, so this is not a suitable result indicator. Instead, one potential source of nitrogen pollution (the residual nitrogen left in the soil at the end of the season) can be measured for individual parcels of land, and this is used as a result indicator. Some schemes use both positive and negative indicators, for example in the Burren Farm Conservation Scheme in Ireland; if there is evidence of damage by cattle to natural water sources or feeding sites, or bare soil in grassland, or evidence of soil erosion, points are deducted from the field score (which determines the payment)². In the biodiversity example from Romania the objective is to maintain and improve the conservation status of flower-rich meadows, but a full botanical survey each year would take several hours' work by a botanist and would be beyond the skill of the farmer. Instead the result indicator uses a list of species characteristic of the meadows in each pilot area, based on analysis of detailed botanical records. It takes about 20 minutes to check the list in each meadow and after training the farmers can do this themselves³.

The choice of result indicators for soil and water objectives must take into account the dynamics of the complex bio-chemical and physical inter-relationship involving the mineral soil, organic matter, soil biota, plant nutrients and water. In agricultural soils this interaction is further influenced and modified by cultivation methods, the type of crop or land cover, grazing and harvesting regimes, fertilisers and plant protection products, and by irrigation and drainage. Intervening in this complex system is likely to have an impact on both soil and water. In some cases, it may be impossible to choose effective result indicators and an RBPS approach will therefore not be feasible.

Water quality indicators present a particular problem simply because water moves - within the soil profile and the underlying sub-strata, through field drains, water courses and river systems, and within and between fields, farms, and within the whole catchment. The concentration of pollutants such as nitrogen and phosphorous is influenced by the presence of sediment, fluctuations in normal water flows, floods, droughts and abstraction rates, and temperature. Farmland is often the main source of key pollutants but may not be the only source and, even where it is the source, there remains the problem of attributing changes in water quality to individual land parcels or farms, which is the scale on which result indicators are normally measured. For this reason, the farm-level objectives and result

² For information on the development, testing and measurement of these and other result indicators see Underwood (2014).

³ Information on the protocols for verifying the result indicators in the New Pilot Agri-Environment Scheme for the Târnava Mare 2015-2018 can be found at <http://www.fundatia-adept.org/bin/ANNEX-E-EN-REDUCED-Farmer-booklet-RBAPS-5-May.pdf> (translated into English).

indicators for water quality are most likely to focus on reducing the level of pollutants in the soil before these reach the water. Therefore, result indicators of the bio-chemical status of soils may be the most useful approach.

Flood risk management objectives are likely to be set at catchment scale and will share some of the problems of water quality indicators, particularly attribution of effects such as reductions in peak flow to specific land management units. However, it might be worth exploring with hydrologists the feasibility of setting farm-level objectives of improving the water-holding capacity of soils, and of the possible result indicators of this that might be used on a field scale.

Achieving the objectives of **more efficient use of water on the farm, and reducing agricultural abstraction** is likely to require changes to the farming system or investment in more efficient technology (such as substituting dryland crops for irrigated crops, drip irrigation instead of conventional sprinklers and storing rainfall in farm reservoirs). These can involve significant investment and changes to the cropping system, where the most appropriate approach might be more targeted use of MBPS agri-environment-climate and investment measures, and of regulatory compliance (e.g. under CAP cross-compliance) and pricing mechanism to reduce abstraction rates.

Reducing the **risk of soil erosion** (by wind and/or water) **and improving the soil organic matter (SOM) content of mineral soils** are the two soil objectives which most clearly have long-term benefits for the farm business. Both help to maintain and improve the functionality (and hence productivity) of farmland soils yet are often not seen by farmers as an essential part of their farm business planning. Existing CAP measures for reducing the risk of soil erosion in arable and permanent crops include, for example, GAEC green cover and other cross-compliance soil standards, and conversion of arable to permanent grass cover using a MBPS agri-environment-climate scheme. These are already targeted at some erosion prone soils, which are identified in varying degrees of detail by most Member States.

A RBPS approach to preventing erosion of pastureland soils is already used in the Burren scheme in Ireland (see box above) where evidence of soil damage leads to a reduction of the farmer's RBPS payment. This is an interesting example of using a negative result indicator, and evidence of how soil damage (or the lack of it) may be a more widely applicable result indicator, possibly using aerial imagery. Its potential would require thorough testing in practice, including consideration of the most suitable time of year for measurement in different farming systems and regions.

Raising the SOM content of mineral soils, especially in arid areas, has several important benefits for both the farm and the environment. These include improvements in soil health (micro-organisms), soil stability, structure, nutrient supply, water availability and fertility of the soil. SOM also helps to stabilise mineral soils against erosion. SOM content is easily determined from soil samples using a standard methodology but changes in SOM can take several years to respond fully to changes in land management. This means that a result indicator based on SOM would have to be sufficiently sensitive to the relatively small changes that can be expected within the lifetime of an agri-environment-climate scheme. Furthermore, the protocols for sampling and measuring changes in SOM as an RBPS indicator would require careful attention, because the SOM content varies at different sampling depths and depends on the cultivation techniques used by the farmer among other factors (for example, no-till soil management increases soil carbon in the upper soil layers but not overall).

Peatland soils have high levels of SOM and are important stores of carbon, but the drained and cultivated peatland soils are very susceptible to loss of the soil itself through oxidation and wind erosion (e.g. some of the most fertile arable soils of many northern Member States). Rewetting peat soils reduces this risk of losing carbon stores and restores the potential for soil carbon sequestration.

Protecting the important environmental functions of peatland soils may involve major land use change and possibly significant reductions in agricultural profitability, perhaps more suited to regulatory, investment and MBPS measures, rather than RBPS. For example, the Areas of Natural Constraint (ANC) payment under Measure 13 is used in the Netherlands to compensate farmers in polder areas for higher water table levels set by the water board to manage peat soils. Also, it is worth noting that standard SOM measurement protocols for mineral soils (e.g. sampling to a depth of 30 cm) are not suitable as an indicator of SOM retention in deeper peatland soils. Where the environmental objective is rewetting peatland soils, an indicator related to changes in the water table may be worth considering if sufficient hydrological data is available.

2.4 Is the necessary data, expertise and institutional capacity available?

The design and implementation of a successful results-based payment scheme will usually require the managing authority to draw upon a wider set of skills and to work more closely with hydrological and soil experts and agronomists than in the design of management-based schemes. High levels of technical expertise plus experience of working with farmers are likely to be needed for selecting soil and water objectives and result indicators; establishing the measurement protocols; targeting and evaluating pilot schemes; and training managing authority and paying agency staff, advisers and farmers. For example, hydrologists may need to work together with agronomists to develop guidance for farmers. Sociological expertise may be required to understand the dynamics of farming communities, to advise on how a scheme can best be designed to be accepted by farmers and to ensure that staff working directly with the farmers have the skills to explain the underlying objectives of a results-based payment scheme, not just how to measure the indicators.

Assembling a team with the right set of skills is the key to successful design and implementation of a results-based scheme. This can mean drawing upon expertise and experience that already exists outside the managing authority, particularly for environmental, sociological and communication skills.

Paying agency staff may not have the skills or training to measure biological results and may need considerable support before they can take on this role. Alternatively, this and other tasks may be delegated to trained specialists in other agencies. A number of managing authorities have used outside experts for some scheme design and training functions, and also to verify result indicators on farms (the EAFRD Regulations permit paying agencies to contract out elements of the verification process to other bodies with the appropriate expertise⁴).

Successful introduction of a results-based payment scheme is likely to require the provision of upfront facilitation for farmers as well as continuing advice, communication and training for farmers and for key intermediaries working with them, such as extension services and private advisers. This requires a wider range of skills and much better understanding of soil and water management than is necessary for management-based schemes, but it is critical for building the necessary trust, knowledge and understanding between the farmer and the staff of the different organisations involved in implementing a results-based scheme. This is likely to require an increase in resources to set up an RBPS, but over its lifetime a well-designed, results-based scheme should deliver more environmentally cost-effective payments to farmers, in terms of achieving the intended objectives on the ground.

⁴ Article 33(2) of Commission Implementing Regulation (EU) No 809/2014 of 17 July 2014

2.5 How will the farming community respond?

One of the main concerns that farmers have about the results-based approach is the risk that the result will not be achievable. If the result indicators are well chosen this risk should be low. If a results-based approach is subject to a high degree of uncertainty, especially as a consequence of factors beyond the farmer's control, it is unlikely to be feasible.

Successful results-based payment schemes require a considerable level of mutual trust between the parties involved, particularly the managing authority and the potential contract holders and their representatives. The non-prescriptive nature of the RBPS contract and the need for farmers to have confidence that the results will be judged in ways that are fair and objective means that trust is particularly important for results-based payment schemes.

For a results-based payment scheme to achieve its objectives it is important to gain the trust and active support of the farming community from the outset, and to maintain and develop this throughout the life of the scheme. Effective two-way communication and the provision of farmer training are key to achieving this.

Culture and history can influence both individual and institutional behaviour, and the levels of trust between farmers and managing authorities vary considerably across Europe. In some places a far greater degree of support may be needed to enable both farmers and authorities to feel comfortable with the division of responsibility that characterises results-based schemes. Offering a nationally or regionally balanced mix of results-based and management-based schemes may also help to overcome cultural differences.

A common feature of all RBPS schemes is intensive input of farm-level specialist advice and training to ensure that the farmers:

- Understand the environmental objectives of the scheme, how the indicators are linked to these objectives and why achieving the objectives benefits society;
- Are clear that they are being paid for the result indicators (not for following detailed land management instructions) and that they will bear the financial risk of failure to achieve results in the form of a reduced or no payment;
- Are fully trained in the protocols for measuring the indicators (this training of course is replicated for paying agency inspectors);
- Understand the possible impact on their farming system and the potential benefits for their business of managing the farm to achieve the indicators every year (for example, they may need to alter the crop rotation or change livestock grazing patterns); and
- Have access to ongoing technical support and feedback on their performance during the contract.

Such advice and training are often a compulsory requirement of the scheme (provided free of charge or reimbursed through the annual payment) and farmers generally respond positively to the freedom to choose how they manage the farm to achieve the results and welcome the advisory support.

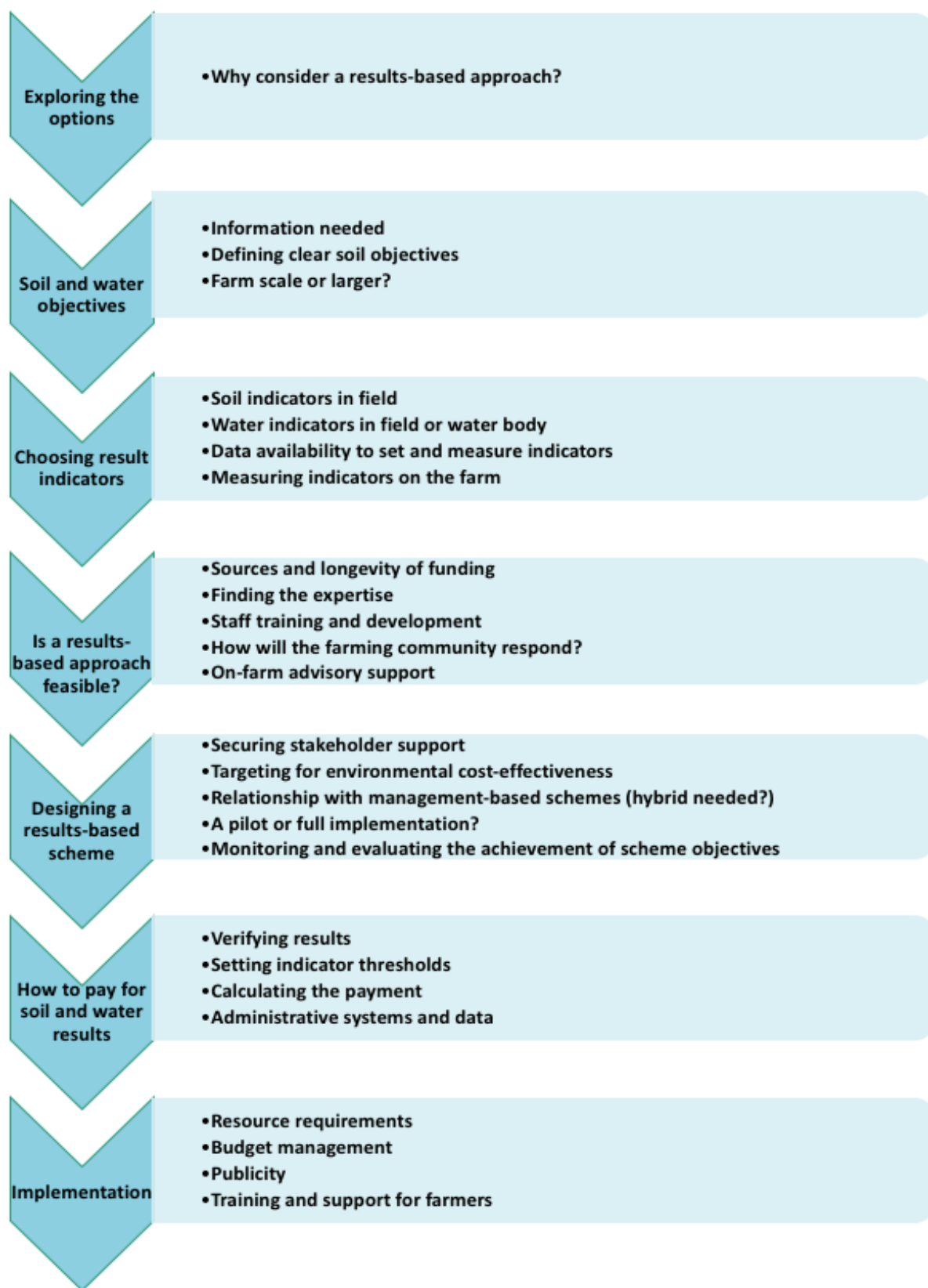
It is important to recognise that there are some circumstances where a RBPS is simply not feasible. These include where there is a lack of scientific information, expertise or data to define and test suitable indicators, where the impact of the farmers' action on the objective takes a long time to be measurable, and other reasons that mean that it is simply not possible to meet best practice criteria for indicators.

Specific challenges for designing and delivering RBPS for soil and water

The Flanders RBPS scheme has revealed some particular challenges in designing and delivering RBPS for soil and water, including:

- **Payment calculation:** how to make the calculation of the income forgone due to the reduced nitrogen inputs as well as calculate the payment rates that should be made for the different levels of achieved nitrogen reduction. It is very difficult to get the data for an accurate estimation of the crop loss attributable to different levels of reduced nitrogen input.
- **Farmers' participation:** it is a voluntary scheme and this means that, despite the wide acceptance, the whole catchment area is not fully covered because some farmers judge that the scheme will have significant costs for them and thus they do not take part. As a consequence, they will keep polluting and this will have a negative impact on the efforts made by the participating farmers. This illustrates that for water quality objectives it is better to have the whole area covered.
- **Skills acquisition:** for farmers to be able to participate, it is quite demanding in terms of the skillset they will need to acquire in order to fully understand the scheme.
- **Scheme ambassadors:** a significant investment will be needed to create an ambassador to promote the scheme among the farming community.
- **Laboratory costs:** this is also an issue, since the scheme covers the soil sampling and testing costs only where the minimum threshold has been achieved. This is a risk for a farmer who does not achieve the minimum nitrogen residue target but has incurred sampling and testing costs that will not be repaid.
- **Social aspect:** there are always some farmers who tend to react negatively to change and this jeopardises the successfulness of a new RBPS. Therefore, the success of such a scheme covering a wide area for water and soil purposes depends on how effectively the implementing bodies are able to change farmers' attitudes, particularly those who are negatively predisposed to change.
- **Evaluating the impact of the scheme in achieving its water quality objectives:** the levels of N were independently measured in the soil and the surface waters, the latter by water authorities. Although results are seen on the parcels, however, the improvement of water quality is not as expected. This raises questions about how the scheme produces results on the ground at parcel level, but it does not seem to be achieving the intended impact on water quality. It also illustrates the importance of checking if an RBPS is actually achieving its intended objectives. This is an essential but quite expensive to set up and run – for example, testing the soil at parcel level but also the waterways.

The flow diagram below summarises the process of assessing the feasibility of using RBPS for soil and water objectives.



3 Designing and implementing RBPS for soil and water

3.1 Verifying results

Payment verification and control of results-based scheme is **completely different** from that for management-based schemes.

The legal requirements for verification by paying agencies have been strengthened for the 2014-20 RDPs, with the aim of reducing the frequency of compliance errors in agri-environment-climate contracts. For schemes run under EAFRD rules for 2014-20 the basic principle is that:

- For management-based schemes the payment controls verify that the management actions which are specified in the contract have been carried out; and
- For results-based schemes the payment controls verify that the result indicators have been achieved, using the indicator measurement protocols specified in the contract.

The guidance to Member States on the use of the agri-environment-climate measure makes clear that **the monitoring and control checks for results-based payment schemes “should concern delivery of the expected results and not the practices undertaken by the beneficiary to achieve these results”** (our emphasis)⁵.

This strong steer, in the case of results-based payments, towards controls based only on results, reflects the difficulties underlined by the European Court of Auditors⁶ in the verification of widely used commitments in many management-based schemes (these include fertiliser application rates and grazing regimes). The underlying rationale is that biodiversity results will be easier to verify than compliance with management requirements.

In a results-based scheme the methodology for measuring the result indicators must be described clearly within the legal agri-environment-climate contract, to enable verification by farmers and control agencies, using the same methods.

The ability to verify results is therefore a major factor in selecting result indicators, designing measurement protocols and setting payment thresholds. Paying agencies prefer result indicators that are stable over a reasonable time period that fits in with the timescale of other field inspections to control CAP payments.

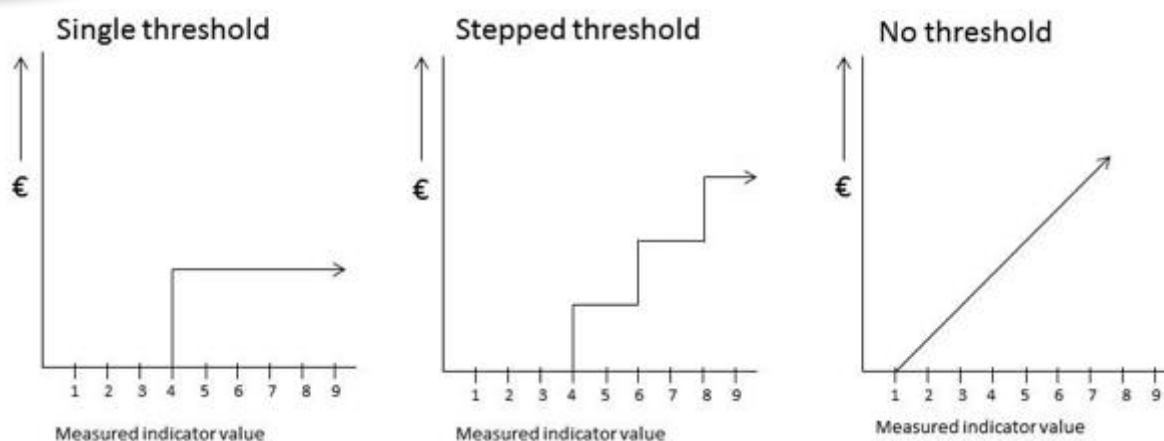
3.2 Setting indicator thresholds

A key question for effective scheme design is where to set **the threshold indicator value** for payment. Is there an optimum indicator score reflecting the biodiversity objective, or is more always better? This is sometimes known as ‘tuning’ the scheme.

If the indicator threshold is set too low (in a scheme with a single threshold), there is a risk that the farmers will not achieve improved resource management, or it may even deteriorate. This problem can be overcome by using more than one threshold in a series of steps reflecting better soil and water quality as illustrated below.

⁵ Section 4.5.2 of DG AGRI *Guidance document: technical elements of agri-environment-climate measure in the programming period 2014-20* (version November 2014). Brussels.

⁶ European Court of Auditors (2011) *Is agri-environment support well designed and managed?* Special Report No 7/2011.



3.3 Calculating the payment

Payment calculations for results-based schemes are made in **exactly the same way as for comparable management-based schemes**, but for results-based schemes the calculation is based on the income foregone and additional costs incurred in implementing **the typical farming practices required to achieve the result indicators**. The managing authority should also provide supporting evidence that these practices can indeed be expected to lead to the desired result⁷. The legal basis for calculating results-based agri-environment payments on farmland in the 2014-20 RDPs is summarised below.

Legal basis for results-based agri-environment-climate payments under the EAFRD

The rules governing how payments to beneficiaries must be calculated are set out in the EAFRD Regulations⁸. Current guidance from DG Agriculture to Member States is that “premiums for result-oriented commitments should be based on the additional costs incurred and income foregone as a result of the farming practices which are in general necessary to achieve the results expected from these commitments.”⁹ This is the approach that has been taken by most of the results-based schemes already implemented in the EU.

Additionally, the farmers’ transaction costs may be covered where justified by up to 20% of the calculated premium (30% for group applications)¹⁰.

There is a requirement for all agri-environment-climate payments from 2015 to avoid double funding with the greening component of CAP direct payments, but it is important to note that any greening reduction of an agri-environment-climate payment does not apply to beneficiaries who are not entitled to CAP direct payments (or those who claim under the Small Farmers Scheme).

Results-based schemes generally have higher **transaction costs** than management-based schemes, reflecting the additional responsibility of achieving the results (rather than simply implementing prescribed management). Using the option of adding transaction costs to the payment calculation for results-based schemes is an acknowledgement of this additional responsibility and can also help to make a results-based scheme more attractive to farmers. The legislation allows a managing authority

⁷ Section 4.5.2.4 of DG AGRI *Guidance document: technical elements of agri-environment-climate measure in the programming period 2014-20 (version November 2014)*. Brussels.

⁸ Article 28(6) of Regulation (EU) No 1305/2013.

⁹ Section 4.5.2 of DG AGRI *Guidance document: technical elements of agri-environment-climate measure in the programming period 2014-20 (version November 2014)*. Brussels.

¹⁰ It was noted in the TG that one option to make RBPS more successful or appealing to farmers could be to pay more than income foregone and costs incurred, justified on the basis that there is an additional risk to the farmer when undertaking the scheme.

to add transaction costs to the payment calculation by up to an extra 20% for schemes open to individuals, and 30% for group schemes. These costs have, of course, to be justifiable but it should be sufficient to provide an explanation of the types of transaction costs to be covered and the percentage to be applied¹¹.

Transaction costs typically cover the time and effort of the contract holder in activities essential to fulfilling the contract, but which are not covered by the main payment calculation. These activities can include, for example:

- Attending information and advisory meetings for contract holders, meeting advisers on the farm, and talking to helpline staff;
- Reading advisory publications and online information;
- Learning to use the techniques for measuring result indicators;
- Checking weather, vegetation growth, grazing pressure and other information needed to make the day-to-day farm management decisions that will determine whether or not the result indicator is achieved; and
- Measuring the result indicator each year.

3.4 Staff training and development

Managing authorities, paying agencies and advisers are used to delivering management-based agri-environment schemes, but for most of their staff, results-based schemes will be a completely new and unfamiliar approach. It is therefore particularly important to be able to secure the necessary resources for training staff before the scheme is launched. A variety of different techniques may be needed for staff training and development, including written guidance materials as well as face-to-face training seminars and workshops. It may also be worth giving more intensive training to a network of 'expert users' who can provide continuing, locally based support to their colleagues.

Staff of the managing authority and the paying agency will need careful training to ensure that they understand:

- The biodiversity objectives and the dynamic relationship between these objectives, the result indicators and the farming system, and the advantages of a results-based approach; and
- How a results-based payment scheme differs from management-based payment schemes with similar objectives, especially the measurement and verification of result indicators and the farmer's freedom to choose the most appropriate farming practices to use.

To deliver results-based schemes successfully the farmers, their advisers, scheme administrators and paying agency, inspectors must:

- Learn a number of new skills (for example, the staff working directly with farmers must be able to build a successful and convincing dialogue with them about the soil and water objectives and how to achieve these within their farming system); and
- Become familiar with new processes, including the measurement of result indicators in the field.

It is vital that investment is made in providing skills development and training for farm advisers working in the target area, to ensure they have sufficient levels of both ecological and agronomic expertise. Continuity of advice provision is highly desirable, because farmers take time to get to know and trust

¹¹ Section 4.7.4 of DG AGRI *Guidance document: technical elements of agri-environment-climate measure in the programming period 2014-20* (version November 2014). Brussels.

an adviser who will influence the management choices made by the farmer and therefore the achievement of the biodiversity objectives. An example of good practice is the Burren scheme in Ireland, where a team of farm advisers/consultants underwent an intensive training course on farming for conservation.

Managing authorities must be assured of the capacity and competence of organisations and independent environmental experts to whom they delegate specialist functions such as farm advisory services and measuring result indicators for farmers or on behalf of the paying agency. These 'third party' staff will require training, clear guidance materials, ongoing support and possibly a formal process of certification.

4 Conclusions and suggestions for improving policy tools that support the use of RBPS for soil and water

In the fourth meeting of the Thematic Group, draft recommendations and conclusions were discussed in the context of three 'lenses' to ensure they are fit for purpose in improving the environmental effectiveness of RDP implementation and the design of schemes to achieve local soil and water objectives. These were: the transferability of policy tools to different contexts across the EU; the benefits to farmers of achieving soil or water objectives on the ground; and the support that managing authorities may need to implement the recommendations. The outcomes of this discussion have been taken into account in the conclusions and recommendations set out below.

There is a limited number of examples of RBPS addressing soil and water objectives, and significant challenges remain in finding methods of measuring the incremental improvements in soil and water condition that can be expected within a single RDP programming period. The Thematic Group felt that a 'hybrid' MBPS/RBPS approach to soil and water schemes would be the best way forward, where management-based requirements are verified and paid for annually, and farmers are offered a 'bonus' results-based payment where the intended results are achieved.

The improvements in policy tools and their implementation to support the use of RBPS for soil and water suggested by the Thematic Group are set out below.

1. In pursuing such hybrid schemes, it is very important that farmers, advisors, paying agency inspectors and auditors are clear about which part of the payment is linked to implementing the management requirements and which part is linked to achieving the result indicators, and that the two parts of the payment are verified, controlled (and if necessary penalised) separately. Achievement of the result indicators should be verified at every inspection and may require the development of intermediate indicators in order to monitor progress.
2. Recognition that achieving a real improvement in soil quality, particularly in levels of soil organic matter, may require continuity of agri-environment-climate contracts for periods longer than five years. This is because the results of improved soil management are often not reliably measurable in the early years and take many years to achieve full effect. Longer contracts offer farmers a longer-term commitment to support for soil- and water-related management, and a greater chance of achieving positive results. However, for managing authorities to commit to longer contracts will require negotiating extended EU support for more than one programming period, in order to avoid the risk that EU priorities change in future and the Member State is left to honour the extended agreement through national funds. There is a precedent for much

longer contracts in earlier CAP schemes where farmers were able to commit to annual payments for 20-years by setting aside arable land.

3. Whether the support is linked to an individual farmer (beneficiary) or to a land parcel/holding is another factor to consider in the context of the first recommendation. With any multi-annual contract there is the potential for a change in land owner or manager, with that risk increasing proportionally to the contract length. One option to address this is to link the results-based component of the scheme to a given parcel of land to allow a continuation of positive management towards soil and water objectives even if ownership or management responsibility changes. Within the current EAFRD Regulation, Article 47(2) allows for the transfer of an agri-environment-climate contract on change of owner/beneficiary.
4. All agri-environment-climate contracts with a RBPS element should include compulsory training requirements for participating farmers.
5. To ensure the effectiveness of new soil and water RBPS, pilot projects should be undertaken to determine appropriate indicators and monitoring strategies in advance of full-scale scheme implementation. Sharing the experience of pilots in different contexts and regions will provide valuable insights into the transferability of an RBPS approach across the Member States.
6. A forum for MS staff and experts involved in the technical elements of design and measurement of results-based indicators for soil and water should be set up for the exchange of best practice.
7. Guidance should be provided on the use of packages of RDP measures to address soil and water objectives, comprising, for example, agri-environment-climate RBPS schemes, technical training and on-farm advice, and non-productive investment support.

5 Linking RBPS with nutrient management and collective approaches for soil and water

Farmers participating in RBPS water quality schemes to reduce diffuse pollution from farmland will almost certainly have to use nutrient management planning as an essential tool to achieve the result indicators, alongside any necessary changes in rotations and cropping patterns. The use of targeted and on-farm advice to help them achieve the result indicators may help to encourage a more lasting appreciation of the need to plan the use of soil and water resources, and the business benefits that can accrue.

Implementing RBPS schemes for water quality and reduced soil erosion risk at the scale of a sub-catchment or other hydrological unit suggests that a collective approach by different land managers would have greatest impact through the uptake on a 'critical mass' of the target area. But this requires careful consideration of the scale at which the result indicators would be measured and paid for, as well as consideration of the issues of collective or individual responsibility for payment penalties if the indicator thresholds are not achieved.