

# Public goods bonus - putting a price on environmental services provided by agriculture

A concept for future-oriented payments for the effective provision of biodiversity, climate and water protection in the Common Agricultural Policy (CAP).





# The public goods bonus – a real innovation

The **public goods bonus** sets itself apart from the current general conditions and from all previous proposals for a re-orientation of the Common Agricultural Policy after 2020.

**Subsidy requirements** (e.g. obstacles to satisfying greening criteria) **are replaced by entrepreneurial decisions by farmers** to provide defined environmental services in the field of biodiversity, climate and water protection on a voluntary basis.

At the core of the public goods bonus, however, lies an evaluation method whereby **the provision of public goods can be determined using working data and mapped using a total points score**. This process was developed in collaboration with working farms in Schleswig-Holstein (Germany) and verified by field investigations. It is currently being tested in other regions as well.

**Farms providing more environmental services will receive more public funding through the public goods bonus.** The public goods bonus not only means that farmers' current environmental services will be assessed and rewarded, but **it will also offer farmers incentives to extend their environmental services to new areas of their farms**. Above all, the extensive farming of unproductive areas with a high nature value will become attractive for farmers.

The public goods bonus **has been adapted to the current administration and inspection system and will fit in with it** and therefore can be applied across the whole of Europe.

The concept of the public goods bonus was developed by the **Deutscher Verband für Landschaftspflege (DVL - Landcare Germany)** and was presented to the public at the start of 2016. Its appeal lies in its logical approach which is geared to the behaviour of farmers.

MARGINS AND TREES LINES ARE VALUABLE ELEMENTS OF AGRARIAN LANDSCAPES.



# Attain European objectives with farmers

1. The Common Agricultural Policy (CAP) is one of the oldest Community policies of the EU and after undergoing numerous reforms plays a key role in European economic and social policy. Its aim, like all other areas of policy, is to help implement higher level strategies and objectives of the EU. This includes the protection and preservation of public goods. Farmers are already doing more than required to help maintain biodiversity, water quality and climate protection, but this is not recompensed in the markets.
2. Agricultural land use, at 48% of the land area in Germany and 44% in Europe<sup>1</sup>, bears the main responsibility for management of natural resources. The preservation of biodiversity, water quality management and climate protection are therefore inextricably linked to the actions of farmers. The DVL has therefore placed **the farmer and his entrepreneurial reasoning and actions at the heart** of its CAP proposal.
3. In the medium-term financial framework 2014–2020, the CAP at 39% accounts for a significant percentage of the overall EU budget (around 400 billion euros). Within the CAP budget, direct payments to farms alone account for around 73% (around 292 billion euros). Direct payments of around 56% in Germany and around 47% across the EU are a significant contribution to farmers' incomes.
4. Farmers cannot be expected to bear the cost of providing environmental services, as desired by society, beyond basic legal requirements. It is assumed that substantial funding will be needed in future in order to tackle environmental shortcomings which are becoming ever more apparent. First column funding has little effect, especially with regard to the preservation of biodiversity, even though payments have been linked to a catalogue of measures since 2014 as part of the greening<sup>2</sup>.
5. The sensitive political nature of this largely undifferentiated income subsidy for farmers in the form of direct payments is being intensified by the latest challenges faced by the EU as well as the uncertain consequences of Brexit and the considerable additional expenditure needed to tackle the migrant, refugee and security crisis. If the agricultural budget and, above all, the existentially important direct payments are to survive at this level, then stronger and more plausible arguments will be needed. An important benchmark will be the strict application of the principle **“public funding for public goods”**<sup>3</sup>.
6. The challenge facing restructuring of the CAP after 2020 will consist in finding appropriate instruments
  - ... to contribute practically and measurably to achieving the objectives of the current priorities of the European Commission, the Paris Climate Agreement and the 2030 Agenda for Sustainable Development of the United Nations,
  - ... avoiding unnecessary bureaucracy and
  - ... creating sufficient financial incentives and greater readiness of farmers for farms to create public goods.

1 Statistisches Bundesamt (Federal Statistical Office) (2016): Statistisches Jahrbuch (Annual Statistics) 2016, Internationaler Anhang (International Annex), p. 672.

[https://www.destatis.de/DE/Publikationen/StatistischesJahrbuch/InternationalerAnhang2016.pdf?\\_\\_blob=publicationFile](https://www.destatis.de/DE/Publikationen/StatistischesJahrbuch/InternationalerAnhang2016.pdf?__blob=publicationFile)

2 See also European Commission (2016): Review of greening after one year. Staff working Document. Brussels, 22.6.2016, SWD(2016) 218 final. European Commission, Brussels. 20 pages [http://ec.europa.eu/agriculture/sites/agriculture/files/direct-support/pdf/2016-staff-working-document-greening\\_en.pdf](http://ec.europa.eu/agriculture/sites/agriculture/files/direct-support/pdf/2016-staff-working-document-greening_en.pdf); Underwood, E. & G. Tucker (2016): Ecological Focus Area choices and their potential impacts on biodiversity. Report for BirdLife Europe and the European Environmental Bureau, Institute for European Environmental Policy, London. 103 pages <http://www.eeb.org/index.cfm?LinkServID=B4275330-5056-B741-DB1EF7244492AC68>

3 See also Habeck, R. & M. Häusler (2015): Fundamente statt Säulen. Ressourcenschonend, tiergerecht und sozial nachhaltig! Plädoyer für eine Neuordnung der europäischen Agrarpolitik. Position paper 16.07.2015. 8 pages. [http://www.martin-haeusling.eu/images/150716\\_PP\\_Habeck\\_H%C3%A4usling\\_Fundamentestatt\\_S%C3%A4ulen\\_final.pdf](http://www.martin-haeusling.eu/images/150716_PP_Habeck_H%C3%A4usling_Fundamentestatt_S%C3%A4ulen_final.pdf); Oppermann, R. & S. Lakner (2016): Fit, fair und nachhaltig. Vorschläge für eine neue EU-Agrarpolitik. Study commissioned by the NABU-Bundesverband. Institut für Agrarökologie und Biodiversität (IFAB - Institute for Agroecology and Biodiversity) & Ingenieurbüro für Naturschutz und Agrarökonomie (Engineering Office for Nature Protection & Agricultural Economics), Göttingen. 76 pages <https://www.nabu.de/imperia/md/content/nabude/landwirtschaft/agrarreform/161104-studie-neueuagrarpolitik-langfassung.pdf>



## How the public goods bonus works

The core of the public goods bonus is intended to protect the most important land-related public goods as equal to hitherto traditional agricultural production and to devise efficient income subsidies. In future, farmers will not only be able to produce market products such as corn, potatoes or milk on their fields, but also ecological goods such as diversity of species, intact bodies of water and climate protection that will also contribute to their income from the farm. Farmers will be able to make their own decisions voluntarily and from an entrepreneurial perspective.

In contrast to typical agricultural products such as wheat, environmental services as part of agricultural production do not have a direct market value. However, it is possible to put a price on these public resources when the public goods provided by specific farms are included. In an initial stage these will be quantified as accurately and transparently as possible. Based on the evaluations of farms, financial compensation for the provision of public goods can be awarded by assigning monetary values or payments from public funds to the evaluation results for individual farms.

### ► Evaluating environmental services of individual farms

The process devised by the DVL maps **general environmental services provided by individual farms by determining a points score**. The total score for individual farms' environmental services is made up of five evaluation categories – for the sample region of Schleswig-Holstein – with a total of 22 parameters that are important for this region (Fig. 1). The parameters evaluated refer to land use forms and management methods of farms which produce positive effects in the specified environmental fields according to current objectives. The results are weighted according to the size of the area and their ecological importance. Only services **above and beyond good farming practice and the current minimum legal standards** are evaluated.

The input parameters make annual evaluation possible. However, with regard to nutrient balance the average values for the last three years, for example, are to be recommended in order to allow for annual fluctuations.

A key requirement when developing the evaluation procedure was to ensure that the provision of public goods was correctly rated on site while requiring little time to gather the data. The procedure was validated in practice by field investigations using selected established EU mandatory indicators (common bird indicator, high nature value farmland indicator)<sup>4</sup> and was also successfully tested on more than 100 representative working farms<sup>5</sup>.

4 Neumann, H. & U. Dierking (2014): Ermittlung des „Biodiversitätswerts“ landwirtschaftlicher Betriebe in Schleswig-Holstein. Ein Schnellverfahren für die Praxis. NuL (Naturschutz und Landschaftsplanung) 46 (5), 145-152. [http://www.lpv.de/fileadmin/user\\_upload/data\\_files/Publikationen/Artikel/NuL05-14-145-152-Neumann.pdf](http://www.lpv.de/fileadmin/user_upload/data_files/Publikationen/Artikel/NuL05-14-145-152-Neumann.pdf)

5 Neumann, H., Carsten, J.-M. & U. Dierking (2015): Praxiserprobung eines neuen Bewertungsverfahrens für Biodiversitätsleistungen landwirtschaftlicher Betriebe. Ein Vorschlag für die Naturschutzberatung. NuL 47 (5), 142-148.

<b>Types of use:</b> <ul style="list-style-type: none"> <li>– Number of types of use</li> <li>– Percentage of permanent grassland</li> </ul>	<b>Landscape elements (LE):</b> <ul style="list-style-type: none"> <li>– Total LE area</li> <li>– Number of LEs</li> </ul>
<b>Arable land:</b> <ul style="list-style-type: none"> <li>– Average field size</li> <li>– Plant cover during winter</li> <li>– Diversity of crop types</li> <li>– Fragmentation</li> <li>– Spring grain</li> <li>– Uncultivated stubble fields</li> <li>– Self-greening fallow land</li> <li>– Flower meadows, strips</li> <li>– No use of “chemical measures” and chemical fertilisers</li> <li>– Conversion of arable land into permanent grassland</li> </ul>	<b>Grassland:</b> <ul style="list-style-type: none"> <li>– Prohibition of levelling and harrowing from 1 April to 20 June</li> <li>– No use of chemical fertilisers</li> <li>– No use of organic fertilisers</li> <li>– 1st mowing from 21 June</li> <li>– Permanent pasture</li> <li>– Fallow land</li> </ul>
	<b>Nutrient balance:</b> <ul style="list-style-type: none"> <li>– Farm-gate balance nitrogen (gross)</li> <li>– Farm-gate balance phosphorus</li> </ul>

Fig. 1: Input parameters to determine the public goods bonus (n=22) using the example of Schleswig-Holstein

## ► Rewarding biodiversity, climate and water protection services of individual farms

The financial reward for biodiversity, climate and water protection services on individual farms can be calculated by multiplying the “total points score” with a monetary point value

(€/point) and the area farmed (ha), resulting in payments to farms (€/farm) (Fig. 2).

### Calculating the public goods bonus for individual farms

Farm payment (€/farm) = Total points score (points/farm) x Monetary points value (€/point) x Size of farm (ha)

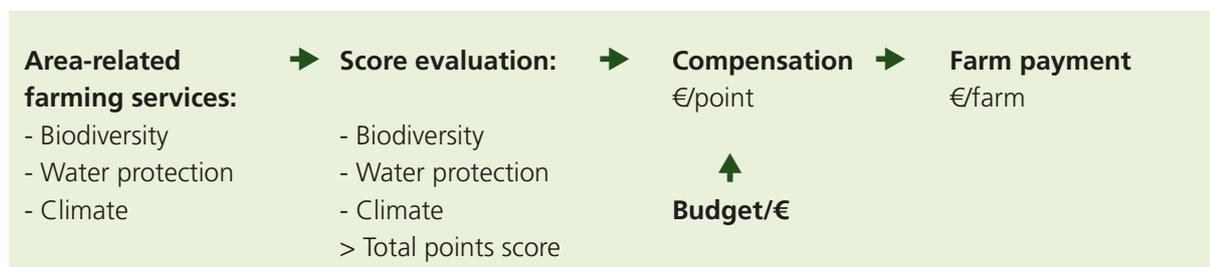


Fig. 2: Determination of the public goods bonus for individual farms by evaluating the score for biodiversity, water and climate protection services of farms (diagram)

## ► Transferable to all regions

Biodiversity in agrarian landscapes is influenced in particular by regional conditions affecting agriculture and landscape. Significant determining factors for biodiversity thus vary considerably between the North German Plain and low mountain areas or also between regions in northern and southern Europe. The evaluation procedure can therefore be applied flexibly with regard to input parameters and their evaluation. Every Member State and every region (e.g. the Federal Länder or states) can adapt the system to the conditions of their site and use or mandatory regional farming requirements

(e.g. mowing dates for grassland) specific to regions or countries though selection of the input parameters and weighting their relative importance. This also applies to the different legal and political requirements which apply to the relevant reference framework and also to the provision of public goods themselves.

With its adaptation of input parameters according to region and farmers' responsibility for on-site implementation, this procedure allows for the subsidiarity principle of the EU.

## ► Connectability to the current administrative system

The input data used for evaluation are based on information which farmers already have or are already familiar with from the application procedure for direct payments, based on the requirements of agrarian environmental and climate programmes or from established legal requirements (Fig. 1). Since the input parameters for farm evaluation have already been established, there is no need to develop a new inspection system. The only need for checks applies solely to parameters which award points.

This ensures connectability with the existing system of agricultural administration and controls. No additional costly data collection in the field is required for this evaluation procedure. The evaluation of farms requires a comparatively low administrative effort to record data but provides a differentiated and transparent picture of the environmental services provided by individual farms.

## ► The public goods bonus as part of a European payments system

The public goods bonus would be a key part of the EU payments system after 2020. All types of land management aimed at preserving general biodiversity and climate and water protection would be included. The current basic and greening bonus for direct payments<sup>6</sup>, any content of ecoagrarian and climate measures not directed at specific objectives and subsidies for the corresponding environmental services of organic farming could be covered.

Further areas for subsidy that are not part of the concept of the DVL, such as rural development (possibly including subsidies for young farmers and smallholders), investments, consultation, aspects of animal welfare, possible further basic subsidies for organic farming and special measures for wildlife conservation over and above general protection of biodiversity should be financed using other means.

<sup>6</sup> For information on the breakdown of direct payments please refer to the Bundesministerium für Ernährung und Landwirtschaft (BMEL - Federal Ministry of Food and Agriculture) (2015): Umsetzung der EU-Agrarreform in Deutschland. Edition 2015. BMEL, Bonn. 122 pages [http://www.bmel.de/SharedDocs/Downloads/Broschueren/UmsetzungGAPinD.pdf?\\_\\_blob=publicationFile](http://www.bmel.de/SharedDocs/Downloads/Broschueren/UmsetzungGAPinD.pdf?__blob=publicationFile)

## ► Supplementary aid programmes required

Special measures for nature, climate and water protection are not covered by the evaluation procedure, therefore separate aide programmes will be necessary. Taking the example of Schleswig-Holstein, this applies to the following fields, measured against the programmes included in the current funding period (a selection; for their allocation see Fig. 1):

### **Managing biotopes (arable land/grassland):**

e.g. creation/upgrading of bodies of water/swales, creation/upgrading of hedges and copses, temporary damming of ditches, rewetting marshes

**Arable land:** e.g. multi-year fallow land (self-greening, wild flower mixes, alternative cultivation methods), toleration of geese/swans/ducks, wild herbs, nesting/laying protection

**Grassland:** e.g. requirements for numbers of animals and grazing periods, special mowing regimes, toleration of geese/swans/ducks, upgrading (regional seeds, transfer of grain), preservation of taxonomic characters, nesting/laying protection

**Nutrient balance:** e.g. slurry/digestate application method, multi-year margins of bodies of water

## Consultation of the utmost importance

The public goods bonus is a new approach to handling payments to farmers and therefore should be accompanied by a voluntary **professional consultation for farmers**. The consultation can focus in particular on explaining the scientific background for the various input parameters of the evaluation procedure. When selecting measures, environmental concerns can be the focus, in addition to financial aspects. Furthermore professional support can be aimed at integrating special protective measures for nature, climate or water in addition. A separate subsidy is needed in combination with the public goods bonus so that consultancy services can be offered to farmers.

THE MANAGEMENT OF UNPRODUCTIVE AREAS BECOMES FINANCIALLY INTERESTING TO FARMERS WITH THE PUBLIC GOODS BONUS.





# The public goods bonus in practice

## Determining the point value

The monetary point value (€/point) to recompense the provision of public goods can be calculated on the basis of the total scores of farms in a region and from the budget available (point value = budget divided by total scores, see Fig. 2). Similar to market prices of agricultural products, the monetary point value can therefore be subject to fluctuations according to the laws of supply and demand. The provision of public goods should be financially rewarding for as many farms as possible. Therefore it must be ensured that the monetary value of a point is at a level to make the operational branch “environmental services” financially interesting. This would be an interesting prospect

particularly for farmers wishing to specialise in this field. The attractiveness of providing public goods would also rise considerably due to good planning reliability.

It is therefore important to establish a **lower limit for the monetary point value (€/point)**.

The application and effect of this lower limit will be explained in the sample calculation below.

Determining a minimum point value would ensure a high level of effectiveness of the means applied, despite a limited budget, and would also ensure a minimum level of public goods.

## Planning reliability by establishing a monetary minimum point value - sample calculation

A total budget of €100,000,000 and a set minimum point value of €20/point are assumed as input values; these limits should not be undercut (lower threshold). With this point value a maximum of 5,000,000 points can be rewarded for all farms ( $€100,000,000 : €20/\text{point} = 5,000,000$  points). If only 4,000,000 points are registered, the point value increases to €25/point ( $€100,000,000 : 4,000,000$  points = €25/point) and farms will receive a higher payment, i.e. the market value of public goods is raised. However, if a total of 10,000,000 points are registered and hence the minimum point value of €20 (lower threshold) is undercut ( $€100,000,000 : 10,000,000$  points = €10/point), this means that not all farms can receive a payment.

In that case the 5,000,000 points that should be paid at the minimum point value of €20/point will be allocated to farms according to their ranking of who offers the most points. This means that a certain level of planning reliability can be ensured.

## Incentive for greater provision of public goods

With the public goods bonus the individual farmer can decide for himself, based on his working data, to what extent it is worthwhile for him to provide public goods using selected measures as a modular system. He can compare the cost of providing public goods with the possible profit resulting from a higher "total points score" relative to his farm. Since working payments are a function of the "total points score" (see Fig. 2) in purely mathematical terms, the manager of the farm will often try to raise his total points score by offering high-quality and correspondingly highly rated environmental services. This results in an incentive even for farms working

with standard methods to cultivate appropriate areas less intensively in future and to specifically produce public goods in these areas. It is also possible that a farm will use or even lease more unproductive areas to produce public goods.

A correction factor in this method of calculation prevents large-scale farms per se from being prioritised by the public goods bonus. Large farms can only generate appreciable payments if certain basic services or points are attained over the whole of the farm area.



Fig. 3: Calculation of the public goods bonus using the example of a mixed crop-livestock farm (assumptions: farm area: 100 ha, monetary points value €20/point, landscape elements highlighted but not to scale, calculation of the total points score, for further explanations see text body.) The monetary effect that can be achieved by the public goods bonus is illustrated clearly by the extensification of 6 ha (the area outline in red to the right).

## Sample calculation for a farm

Let us take a dairy farm in a typical landscape of Schleswig-Holstein with 100 ha, comprising 52 ha of permanent pasture, 45 ha arable land and 3 ha of landscape elements divided into four different types.

In this initial situation (Fig. 3 above) traditional intensive management of all areas is assumed. In a scenario (Fig. 3 below) 6 ha (11.5%) of permanent pasture is extensified (no fertilisers, no levelling/harrowing, late mowing) and is used as feed for young cattle and cows in their dry lactation period. According to the public goods bonus model the farm will be given a total score of 13.82 points for its public goods under intensive management; this is largely determined by the existing landscape structure (hedges, ratio of arable land to grassland)<sup>7</sup>. With extensification of these 6 ha of grassland, the total score for the farm rises to 16.39 points. In the evaluation process it was assumed that the farm would not gain any points regarding nutrient balance (cf. Fig. 1) due to its intensive milk production practices even after extensification of partial areas. With an assumed €20/point this results in a payment of €27,640 p.a. for intensive management and €32,780 p.a. for extensification of the 6 ha. The extent to which the farm bonus is increased by re-use of the partial area depends largely on the monetary point value (see calculation formula, Box 3). For example, with €30/point payment would be €41,460/farm (before) or €49,170 (after).

A very large number of farms are likely to have comparable farming conditions; this means that they can create more public goods with straightforward changes in farm management as shown in the example. The operational branch of "environmental services" will give these farmers good (additional) financial prospects if the points they earn are recompensed sufficiently. The options for implementing measures to increase total scores are manifold, depending on farm type and landscape and are directed in particular at optimising fertiliser strategy in order to lower the nutrient balance rating (see input parameters for evaluation, Fig. 1).

<sup>7</sup> Bewertung siehe [http://www.lpv.de/fileadmin/user\\_upload/Neuausrichtung\\_GAP\\_Diskussionspapier\\_DVL\\_2.pdf](http://www.lpv.de/fileadmin/user_upload/Neuausrichtung_GAP_Diskussionspapier_DVL_2.pdf)



## The strengths of the public goods bonus at a glance

1. **High level of acceptance by farmers!** The main approach is oriented towards business aspects and sustainability as well as farmers' freedom of choice in the measures they implement.
2. **Public funding flows transparently into specific environmental services for the public good!** This is an important precondition for justifying the CAP budget to society.
3. **Important agricultural structures are supported!** In particular farms with a high percentage of ecologically valuable land and appropriate management will receive a larger bonus.
4. **Incentives are created!** The targeted reward of environmental services for biodiversity, water and climate protection can act as incentives for farmers to implement more such measures than previously.
5. **Points system ensures orientation towards results!** It is a points value that forms the basis for the bonus rather than the lack of earnings and increased costs. Abandoning a purely action-oriented approach also satisfies the key idea of results-oriented nature conservation concepts.
6. **Environmental services can be defined exactly for individual member states and regions!** This gives regions the opportunity to align effective measures with landscape and farming conditions.
7. **It ensures connectability!** The method is based on existing data and can be linked to the current administration and inspection system.
8. **Transparent subsidies!** The public goods bonus method ensures transparency and feasibility. It satisfies essential preconditions for a subsidy system that is viable for the future and accepted by society.

Landcare Germany (DVL) is the umbrella organisation for landcare organisations in Germany. Farmers, conservationists and representatives of local and regional authorities and politicians work on a voluntary and equal basis in the individual landcare associations. This close collaboration based on partnership is the basis for mutual understanding, trust and acceptance in the region in order to

- ... preserve living landscapes in the long term in a responsible manner
- ... connect habitats to each other
- ... promote farmers' contributions to the environment
- ... protect bodies of water and the climate in a natural manner
- ... strengthen regional value added chains
- ... create spaces for leisure and adventure.

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