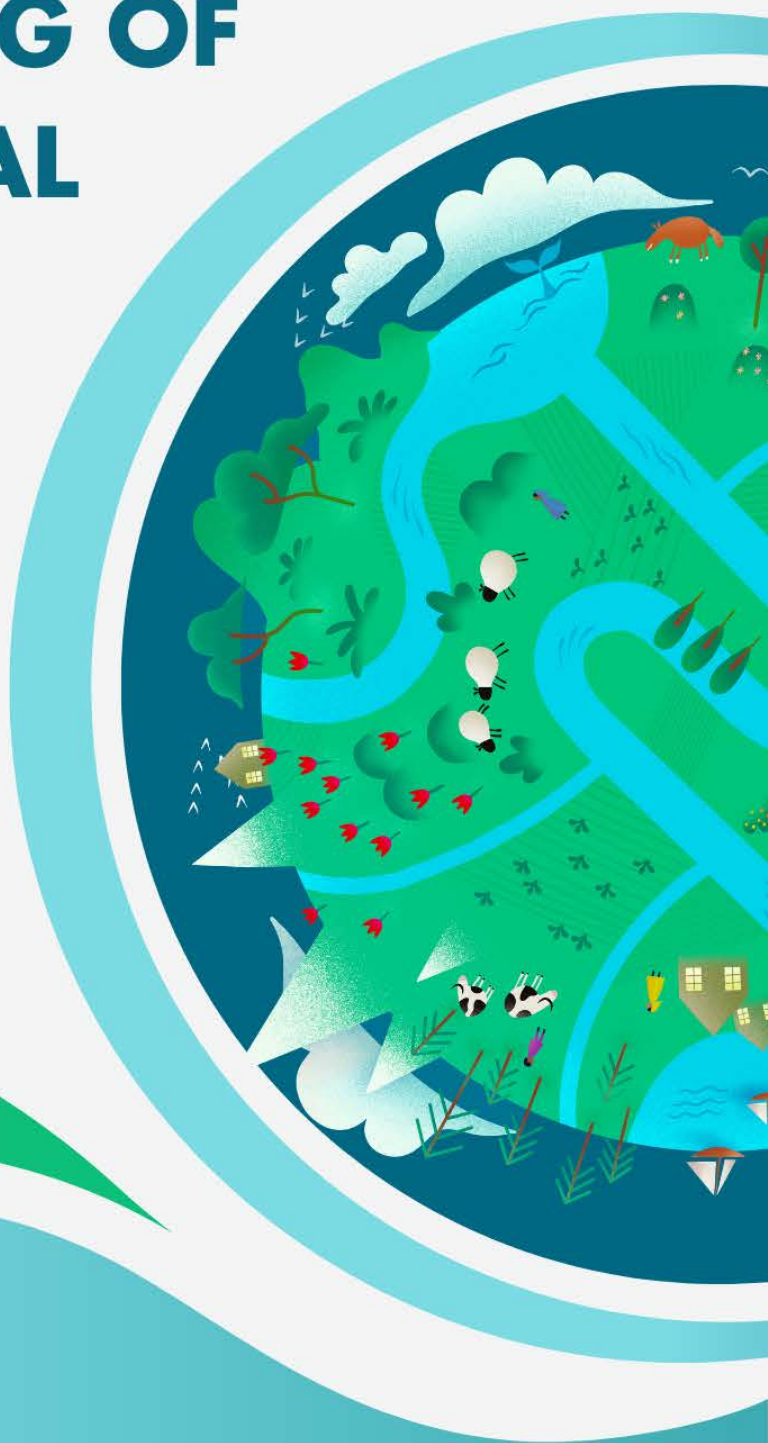




Food and Agriculture
Organization of the
United Nations

THE GREENING OF AGRICULTURAL POLICIES IN GERMANY

A CASE STUDY



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A CASE STUDY

Sebastian Lakner

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Acknowledgements

In this policy brief, we understand the greening of agricultural policy as the integration of environmental, climate and sustainability objectives into policies and practices related to agriculture.

This policy brief contains an analysis of the agri-environmental instruments and schemes offered for farmers to improve the environmental friendliness and sustainability of the German farming sector.

The aim of this case study is to provide material for pre-accession countries and audiences in the South Caucasus, Türkiye and Central Asia about the long-term experiences of one European Union Member Country (Germany) towards a more sustainable agriculture sector.

The report is prepared by **Sebastian Lakner, Professor**, University of Rostock in Germany. The study is part of the Food and Agriculture Organization of the United Nations (FAO) project TCP/RER/3803, contributing to the materials of FAO-IAMO (Leibniz Institute of Agricultural Development in Transition Economies) Joint Regional Agricultural Market Information System and Policy Monitoring workshop.

Quality review and guidance on the report's structure, components and content, including policy recommendations, were provided by **Dmitry Zvyagintsev**, Policy Officer, FAO. The production of this publication was coordinated by **Tania Santivaniez**, Agricultural Officer, Regional Priority Programme Coordinator for Natural Resource Management and Climate Change, FAO, with valuable communication and technical insight provided by **Valentina Gasbarri**, Communication and Knowledge Management Specialist.

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Foreword

The world today faces unprecedented challenges that require urgent and integrated actions. As we grapple with climate change, biodiversity loss, natural resources depletion and environmental pollution in Europe and Central Asia, it is imperative to transition towards green agricultural measures that can secure the future for our region and planet.

This report delves into the status of green policies in Germany, exploring their alignment with key European Union initiatives such as the Common Agricultural Policy (CAP), the European Green Deal and the Biodiversity Strategy for 2030. These frameworks provide the foundation upon which Germany has built its robust approach to sustainability, emphasizing environmental protection, resource efficiency and social equity.

The country's commitment to the European Green Deal and the Farm to Fork Strategy underscores the proactive stance Germany has taken on sustainability. Initiatives aimed at reducing pesticide use, promoting organic farming and enhancing biodiversity reflect a broader vision for a more environmentally resilient agricultural sector. At the heart of the agricultural policy in Germany lies the tension between environmental stewardship and economic viability. The increase in agricultural input and output prices following geopolitical events underscores the delicate balance policymakers must strike in setting payment rates and incentives that encourage green practices without burdening farmers financially.

This report further delves into the regionally tailored approaches Germany has taken with regard to agricultural, environmental and climate measures. Federal states such as Bavaria emerge as leaders, leveraging diverse agricultural landscapes to implement robust programmes targeting biodiversity, water quality and cultural landscape preservation. The example of Bavaria underscores the potential of regional-level policy design to tailor solutions to local ecological challenges effectively.

This report provides guiding principles and actionable recommendations that can be used by policymakers to improve agricultural policy and environmental sustainability in Germany

and beyond by reorienting their food systems towards better nutrition, environmental sustainability and economic resilience. The report was developed through a scientific, transparent and inclusive process that involved extensive consultations and integrated diverse forms of knowledge and expertise, followed by a rigorous peer review process.

This report is the culmination of a robust process underpinned by scientific rigor, transparency and inclusivity.

I extend my heartfelt appreciation to all experts whose contributions shaped this document, with special thanks to Prof Dr Sebastian Lakner of the University of Rostock in Germany and Dmitry Zvyagintsev, Policy Officer at FAO, for their leadership and dedication. The experience of Germany demonstrates the importance of aligning national policies with broader international frameworks, fostering innovation and engaging all stakeholders in the transition to a greener policy.

I hope this report will inspire policymakers and stakeholders to refine agricultural policies to ensure they reflect the dual imperatives of environmental sustainability and economic resilience.

As we forge ahead, being an integral element of Regional Technical Platform on Green Agriculture, may this report and other policy-related publications serve as a catalyst for transformative action, shaping a sustainable future where human activities thrive in harmony with nature.

Tania Santivanez

Agricultural Officer, Coordinator for the Regional Priority
Program Natural Resources, biodiversity and Climate
Change, Coordinator of the Green Agriculture and Green
Connect projects

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Abbreviations

AECM	agri-environmental and climate measures
AEM	agri-environmental measures
ANC	areas with natural constraints
BMEL	Federal Ministry for Food and Agriculture (<i>Bundesministerium für Ernährung und Landwirtschaft</i>)
BMUV	Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (<i>Bundesministerium für Umwelt, Naturschutz, nukleare Sicherheit und Verbraucherschutz</i>)
BÖLW	Federation of Organic Food Producers (<i>Bund Ökologische Lebensmittelwirtschaft</i>)
CAP	Common Agricultural Policy
DAFM	Department for Agriculture, Food and the Marine of Ireland
EAFRD	European Agricultural Fund for Rural Development
EC	European Commission
EFA	ecological focus area
FAO	Food and Agriculture Organization of the United Nations
GAEC	good agricultural and environmental conditions
GHG	greenhouse gas
KULAP	cultural landscape programme
RDP	rural development programme
SRU	Council of Environmental Experts (<i>Sachverständigenrat für Umweltfragen</i>)
UAA	utilized agricultural area
UBA	Federal Environment Agency (<i>Umweltbundesamt</i>)
WBA	Scientific Advisory Board for Agricultural Policy (<i>Wissenschaftlicher Beirat für Agrarpolitik, Ernährung und gesundheitlichen Verbraucherschutz</i>)
WBAE	Scientific advisory board for agricultural policy, nutrition and consumer health protection (<i>Wissenschaftliche Beirat für Agrarpolitik, Ernährung und gesundheitlichen Verbraucherschutz</i>)
WF	weighting factor
ZKL	Commission on the Future of Agriculture (<i>Zukunftskommission Landwirtschaft</i>)



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Environmental challenges of the agricultural sector

1. Environmental challenges of the agricultural sector

In the early 2020s, the German agricultural sector faces a number of severe challenges. Unresolved environmental problems and problems in animal husbandry have become apparent in the public and are widely discussed. Society expects a more sustainable sector – but in many cases not on a well-informed basis. The Federal Ministry for Food and Agriculture has reacted in recent years and started different policy approaches, but with only limited success to date.

The **decline of biodiversity** has been observed for decades. In 1985, the Council of Environmental Experts (*Sachverständigenrat für Umweltfragen*, or SRU) reported about the declining species numbers: “Since about 1960, there have been increasing observations of an intensified, in some cases accelerating decline of many animal and plant species, including those that had previously received little or no attention” (SRU, 1985).

Increasing numbers of species and habitats in the Red List of Endangered Species have been observed since their introduction in the late 1970s. In 2002, the National Council for Sustainability introduced the birds index as a sustainability indicator, as already had been done in the United Kingdom of Great Britain and Northern Ireland. This indicator shows a declining trend for farmland birds. In 2017, an association of conservationists published a paper on the decline of insects, the so-called Krefeld study (Hallmann, 2017). Various publications show a direct link between agricultural practices and the decline of biodiversity (Busch *et al.*, 2020; Hertzog *et al.*, 2023; Seibold *et al.*, 2019; Traba and Morales, 2019).

The implementation of the Natura 2000 Strategy – and, in particular, the Habitats Directive in Germany – as the most important European conservation policy can be regarded as an indication of failure in this policy field: Germany delayed the process, leading to an infringement procedure by the European Commission beginning in 2015. Currently, about 9.3 percent of the national area is protected according the Habitat Directive, and 69 percent of these areas are in either “unfavourable-insufficient” or “unfavourable-poor” condition (BMUV, 2020). Consequently, the National Academy of Science Leopoldina (2020) highlights in a statement the need for action in agriculture and, on the other hand, points out that the conservation of biodiversity is a task for society as a whole (Leopoldina, 2020).

Climate change: The agriculture and land use sector is responsible for approximately 12 percent of greenhouse gases (GHGs) in Germany. In absolute terms, GHGs have been

reduced since 1990 – mainly through the reduction of livestock in eastern Germany – but to a lesser extent than in other sectors, so the relative contribution of agriculture to total emissions rose from 10 percent to 12 percent (UBA, 2020). An important lever for improving the climate balance of the agricultural sector could be the rewetting of former peatland sites that are currently used as farmland. Such former peatlands are located on 2.5 percent of the utilized agricultural area (UAA) in the EU-27¹ and are responsible for 25 percent of the emissions from the sector (Tanneberger *et al.*, 2021). Rewetting could be an efficient way to reduce emissions (WBAE, 2016), but this strategy requires considerable financial effort and a targeted support strategy, which could be at least partially provided under the Common Agricultural Policy (CAP).

Nutrient surpluses: The nitrogen surplus in Germany has been reduced from a surplus of 141 kg N/ha after reunification to 89 kg N/ha, mainly due to structural changes and partly due to improved fertilization efficiency (UBA, 2022). However, the target of 70 kg N/ha outlined in the sustainability strategy has not yet been reached; on the background of harsh criticism of the European Commission and a judgement of the European Court of Justice of 2018, the federal government reformed the fertilizer application ordinance in 2020, formulating somewhat stricter limits for fertilization and introducing regions with reduced fertilization. However, doubts remain as to whether the renewed fertilizer application ordinance can solve the problems in regions with high animal stocking densities and high nutrient overflows (Löw, Osterburg and Klages, 2021).

Animal welfare: In the past 10 years, the situation of animal husbandry has received some media attention. Parts of society expect an improvement in the state of animal welfare. According to a 2015 report from the Scientific Advisory Council on Agricultural Policy, up to EUR 5 billion could be invested annually in this area (WBA, 2015); at the same time, meat production lacks binding standards and a mandatory state labelling system. The Scientific Advisory Board recommends the introduction of a broadly effective, mandatory animal welfare label and a comprehensive labelling policy overall (WBAE, 2020). In this respect, there is a financial need to support the transformation and invest in new stable systems. Furthermore, in the past ten years, a continued societal debate has taken place that questions the system of animal husbandry. Following this debate, there are ongoing attempts to change the marketing system in the meat market.

¹ The term “EU-27” is used to refer to the 27 Member Nations of the European Union.

Socioeconomic challenges: Besides environmental issues, there are a number of socioeconomic challenges for the sector. The milk sector has faced difficult years after the phase-out of the milk quota in 2015. The renovation of the fertilizer regulations also led to political unrest in 2019, which is still ongoing. Within the agricultural sector the need for more sustainability is perceived differently. Studies show heterogeneity with regard to openness for reforms: Some farmers are open and already engaging in environmental measures, and other farmers are rather market oriented and willing to perform only environmental measures, if the conditions fit their interests. A small group of conservative farmers is mostly resistant against any kind of change (Bethge and Lakner, 2022; Feindt et al., 2021).

Sustainability and environmental objectives play an increasingly important role in Germany. The federal government used an expert and scientific commission to prepare policy changes and formulate acceptable compromises. In 2019, the federal government installed an expert network on the future of animal husbandry under the chair of the former agricultural minister Jürgen Borchert. The Borchert Commission published a report containing recommendations for the future of animal husbandry

(Borchert Commission, 2021). As a reaction to continued farmers' protests, Chancellor Angela Merkel in 2020 called a Commission on the Future of Agriculture (*Zukunftskommission Landwirtschaft*, or ZKL) comprising diverse experts, scientists and stakeholder groups from agriculture to environment to consumer. The committee published a general whitepaper on the future of agricultural policy in Germany in 2021 (*The Future of Agriculture - a common agenda*), which confirms this long-term general necessity for sustainable transformation while also pointing out conflicting targets that need to be addressed (ZKL, 2021).

The agricultural policy describes a longer trend towards supporting environmental measures within the CAP. Most initiatives and measures are designed within the CAP framework, but some smaller areas are designed at the national level using funds from the national or federal state budgets. Some of the measures are well established and accepted, but some of the measures are still part of an ongoing political debate over the degree of future sustainability policies and the viability of food and agriculture. Some of the instruments are in conflict with productivity targets.





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2

First agri-environmental measures of the Common Agricultural Policy: 1992–2010

2. First agri-environmental measures of the Common Agricultural Policy: 1992–2010

The first attempts for extensification were started in the late 1980s with the extensification regulation (European Commission, 1988) leading to the first **agri-environmental measures (AEM)** in some of the German regions (Hesse, Baden-Württemberg). With the **MacSharry reform in 1992**, the AEM became a systematic part of the CAP as so-called “accompanying measures”. The main objective was twofold:

1. Reduce production capacities and thereby oversupply in the European Union and provide income opportunities in disadvantaged regions.
2. Ensure that the “accompanying measures” create additional income sources (besides the coupled direct payments) for regions with lower production capacities.

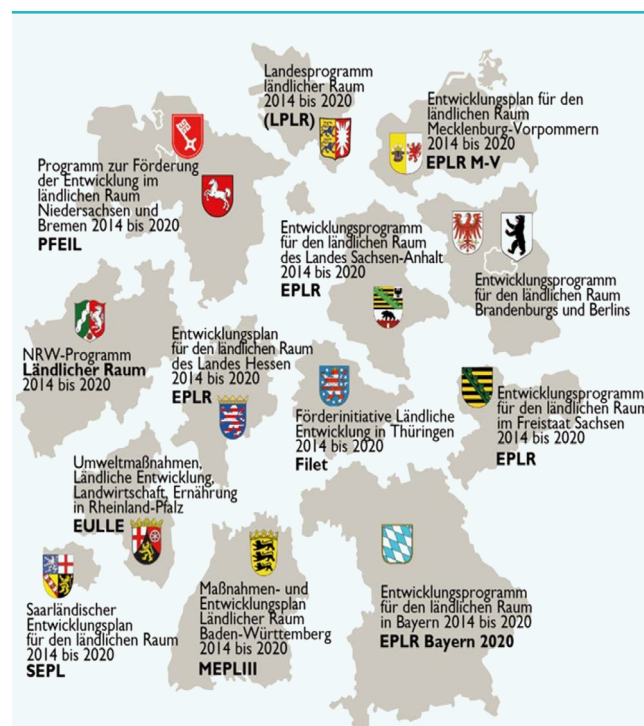
AEM were part of MacSharry’s strategy to partly compensate for price decreases during the 1990s, starting with a set of AEM after the MacSharry reform of the CAP in 1992, which was applied in the German federal states (Bundesländer). Here, many measures were developed over a longer period, with a longer learning experience. Expenditure for AEM increased from EUR 24 million in 1988 to EUR 506 million in 2004 (Osterburg and Stratmann, 2002). The system of the AEM were offered within the rural development programmes (RDPs), the so-called “Pillar II” of the CAP. The European Union spending included the obligation for Member States to provide detailed monitoring reports of all measures within the RDPs. Each agri-environmental programme was programmed within the large federal states (13). Only the city states of Berlin, Hamburg and Bremen were linked to neighbouring federal states (Figure 1).

The AEM are measures that introduce production limitations and specific techniques to support environmental services (e.g. support for biodiversity, ecosystem services or enhancing soil fertility) or that limit potential environmental damage (nutrient overflow, reducing the risk of erosion). AEM are offered in multiple production systems (e.g. grassland or arable land) or on specific permanent crops, in fruit or vegetable production or in vineyards (Lakner *et al.*, 2021). The AEMs are different in objectives, scope and level of detail. With regard to funding, the rules in the early years allowed income effects within the agri-environmental payments, since income was an objective of AEM. This changed from 2000 onward, when only opportunity costs or income forgone could be financed. In 2007, the European Commission also allowed adding “transaction costs”, which was a flexible term for any calculations. Most of AEM offered contracts from five to seven years, which enhanced long-term effects. For the environment, longer contracts can help,

due to the fact that improvement, especially for biodiversity or ecosystem services or climate effects, needs a longer duration of measures (Freese, 2013).

Especially in the early years, there were systematic weaknesses within AEM that were criticized by the European Court of Auditors. A first report of 2011 found that objectives were numerous and not specific enough to assess policy impacts by this sort of spending. Problems around the level and differentiation of payments were found as well. Furthermore, the court recommends the enhancement of the distinction of simple and more demanding agri-environmental schemes (European Court of Auditors, 2011). In the same vein, studies indicate that complex and demanding schemes (so-called “dark green programmes”) with high payment rates would achieve the foreseen objective, whereas simple schemes would benefit farmers rather than contributing to the environment (Armsworth *et al.*, 2012; Batáry *et al.*, 2015).

Figure 1. Agri-environmental measures within the German federal system, 2014–2020



Source: Keelan, S. & Freese, J. 2017. Die Förderpraxis für artenreiche Wiesen und Weiden [The funding practice for species-rich meadows and pastures]. Presentation from 18 October 2017, Hachenburg. http://www.dlkg.org/media/files/arbeitsgruppen/dlkg_ag2017_hachenburg_keelan_freese.pdf

Support for organic farming as a sustainable farming approach is included in the CAP AEM, widely implemented in Germany starting in the 1990s. The organic farming system has been developed throughout the twentieth century as a system based on private standards, which include a strict ban of mineral fertilizer and chemical pesticides. Wide crop rotations and the use of mechanical weed control have resulted in a farming system that has a number of different environmental advantages (Hole *et al.*, 2005; Hülsbergen *et al.*, 2023; Sanders and Heß, 2019; Tuck *et al.*, 2014) but also significantly lower production yields (Seufert, 2019). Based on higher prices and on subsidies, organic farms achieve higher profits (Kuhnert and Offermann, 2023); this is consistent with international studies (Crowder and Reganold, 2015). The certification system is established, and a 2007–2009 investigation in multiple countries suggests that the organic certification is largely functioning across Europe (Gambelli *et al.*, 2012).

In 1991, the European Commission released a regulation for organic plant production (European Union Regulation 2092/1991) (European Commission, 1991), and in 1999, a regulation for organic animal husbandry was added (Regulation 1804/1999) (European Commission, 1999). The organic farming sector was already based on a tight link to markets. The introduced standard of 1991 for organic farming facilitated marketing, since from thereon the terms “organic farming” or “ecological farming” were legally protected and defined by these European Union standards. Consequently, the organic market has grown throughout the past 30 years (Figure 2).

The organic farming sector can be regarded as an element of a sustainability strategy in Germany. This was highlighted in the early 2000s, when organic farming became a policy priority of the federal government in 2001–2005. The system itself brings a number of environmental advantages, but the evaluation of the system is also controversial. Organic farming as an established system can be regarded as element of a holistic “sustainability strategy”, but, due to its limited production potential and the intrinsic problems, improving the environmental performance within other farming approaches is necessary as well (Hülsbergen *et al.*, 2023; Meemken and Qaim, 2018; Reganold and Wachter, 2016; Seufert and Ramankutty, 2017; Tscharnkte *et al.*, 2021).

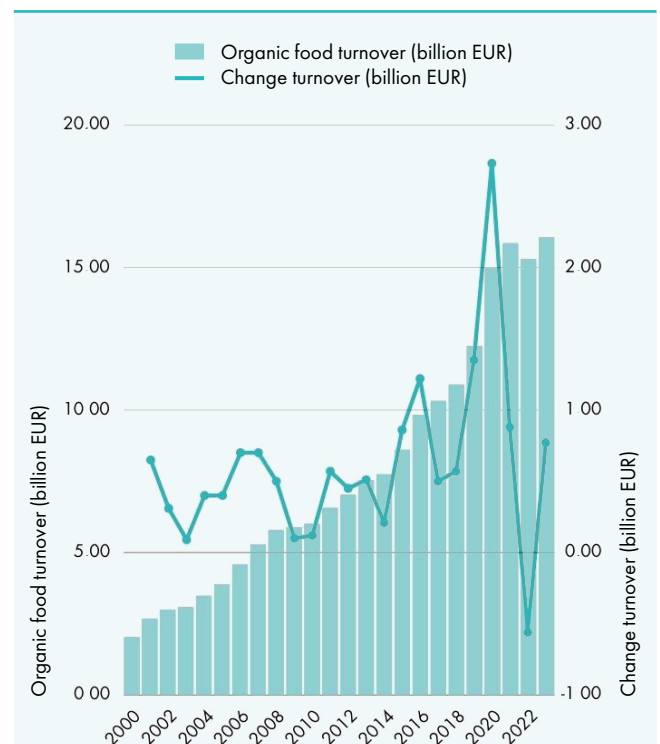
With the Fischler Reform of 2003, implemented from 2005 onward, the European Union introduced **cross compliances** as a bundle of general ordinance law linked to direct payments (therefore “cross compliance”): Farmers receiving direct payments have to comply with general environmental rules and other general regulations for good practice in agriculture, animal husbandry and food safety (BMEL, 2015). Cross compliance uses pre-existing environmental regulations in Germany, but in other countries, some of these laws did not exist. The cross compliance approach made the regulatory law uniform across the European Union market and created a level playing field across the large European Union market for agricultural products. In 2015, cross compliance applied to 7.5 million farms European Union-wide receiving funds of approximately EUR 47 billion (European Court of Auditors, 2016).

On the other hand, there has been some criticisms on the implementation of cross compliance. As it is based only on existing regulatory law, there are no additional effects coming from this instrument beyond the creation of a level playing field. The European Court of Auditors has repeatedly investigated and criticized the system and implementation of cross compliance.

A 2008 report from the European Court of Auditors concludes that cross compliance is not sufficiently effective because objectives and rules are not precisely defined and therefore it remains unclear what cross compliance should achieve and sanctions and controls are not well implemented in many Member States (European Court of Auditors, 2008). A follow-up report from 2016 found some improvement in simplifying cross compliance, but the report still criticizes the complexity, especially for small farms (European Court of Auditors, 2016). Other studies have confirmed problems in consistency. For instance, Knuth *et al.* found some diversity within cross compliance implementation in the German federal states (Knuth, Amjath-Babu and Knierim, 2018).

Overall, the long-term trends within the CAP have supported the trend towards more sustainable agricultural production in Germany. The development from market intervention policies in the 1980s to direct income support after 2010 has reduced the pressure to produce intensively and has further improved the environmental balance.

Figure 2. Development of the organic market in Germany 2000–2022



Source: Author's own elaboration based on data by, for example: BÖLW. 2023. *Sector Report 2023 Organic Food Industry*. Berlin, Federation Organic Food Business (BÖLW). “Turnover organic food” includes the total sales of organic food per year.



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3

Greening of direct payments and agri-environment and climate measures: 2014–2022

3. Greening of direct payments and agri-environment and climate measures: 2014–2022

3.1. Greening of direct payments

The CAP reform of 2013, implemented in 2015, introduced the **greening of direct payments** as a new approach of environmental policy. Thirty percent of the direct payments (Pillar I of the CAP) are linked to the fulfilment of three environmental criteria, amounting to EUR 1.5 billion per year in total and, for farms, EUR 87 per hectare. However, in the event of non-compliance or sanctions, the full greening payment (30 percent of the direct payment) and an additional 7.5 percent of the direct payments (roughly EUR 109/ha) could be curtailed. The three criteria are a) crop diversification; b) maintenance of environmentally sensitive grassland; and c) ecological focus area to support biodiversity (Lakner *et al.*, 2021), explained as follows:

Crop diversification sets rules for crop production on arable land. Farms larger than 30 ha must cultivate at least three crops. The first crop shall not exceed 75 percent, and the first two crops shall not exceed 95 percent of arable land (BMEL, 2015). On farms with a size of 10–30 ha, only a minimum of two crops must be produced, with the first not exceeding 75 percent. Farms smaller than 10 ha are exempted from these rules.

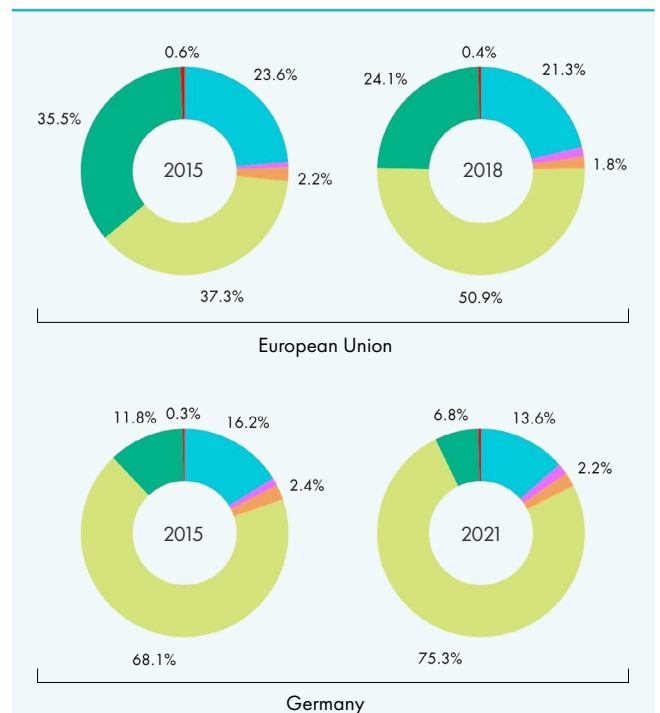
Grassland maintenance limits the conversion of grassland to arable land to 5 percent of the regional area. Further conversion must be allowed by regional authorities. Environmentally sensitive grassland (e.g. in protected areas like Natura 2000) are forbidden (BMEL, 2015).

Farms must provide 5 percent of their arable land as **ecological focus areas** (EFAs) to “safeguard and improve biodiversity on farms” (European Commission, 2013, Article 46 and Figure 44). In Germany, there has been a choice of more than 15 different options with a given weighting factor (WF). The most important options were catch crops or undersown crops (WF 0.3), fallow land (WF 1.0), leguminous plants (WF 0.7/1.0), stripe elements (WF 1.5) or landscape elements (WF 1–2). Other options such as afforestation (WF 1.0) or agroforestry (WF 0.3) were chosen only by a few farms and are of little relevance. Therefore, 1 ha EFA is equivalent to 0.3 ha catch crops, 1 ha fallow land or 1.5 ha landscape elements. Farms smaller than 15 ha were exempted from EFA, as were farms with more than 75 percent of agricultural area with grassland or fodder production (BMEL,

2015). The set of EFA options varied throughout the European Union (European Commission, 2022a).

In Germany and within the European Union, the main EFA choices were catch crops, leguminous plants and fallow land, as displayed in Figure 3.

Figure 3. Option within the ecological focus area chosen by farmers in Germany and in the EU-27 plus the United Kingdom of Great Britain and Northern Ireland



Note: The figure shows the share of the various options within the total ecological focus area before applying weighting factors.

Source: Author's own elaboration using data from:

European Commission. 2016. Rural development programmes by country; Factsheets and country files for the member states. Brussels, Belgium, European Commission.

BMEL. 2016–2019. Data on Greening Decision—Answer by the Ministry to the Parliamentary Request of Dr. Kirsten Tackmann (Die Linke) 2016–2019. Berlin: Federal Ministry for Food and Agriculture (BMEL), as cited in Lakner, S., Schleyer, C., Schmidt, J. & Zinngrebe, Y. 2021. *Agricultural Policy for Biodiversity: Facilitators and Barriers for Transformation*. In: V. Beckmann, ed. Transitioning to Sustainable Life on Land. Basel, MDPI.

Though the instrument used a significant proportion of the CAP expenditure, the overall impact was rather limited. The implementation across the European Union left some degree of flexibility and used many exemptions at the farm level. For instance, (Pe'er et al., 2014) showed that 48 percent of the area in the European Union and 88 percent of farms were exempted from the main greening requirements, suggesting some substantial loopholes in the implementation and reducing the environmental impact of this measure at the European Union level. An ex-ante analysis from the European Commission (European Court of Auditors, 2011), with even stricter greening rules, showed crop diversification and maintenance of grasslands to have had little effect on most of the European Union farms; 92 percent and 84.5 percent of all European Union farms had zero costs of the two measures, respectively, suggesting that these two options had little additional environmental effect. This was not the case for EFA, where the assessment predicted additional costs for 45 percent of the farms (European Court of Auditors, 2011).

A survey among 90 ecologists across Europe showed that only some of the EFA options – namely fallow land, flower strips and landscape elements – had the potential to contribute to the target (safeguarding biodiversity on farms) (Pe'er et al., 2017). Single studies on the implementation of EFA confirmed the results of this survey (Busch et al., 2020; Dellwisch, Schmid and Anthes, 2019; Ekroos et al., 2019; Traba and Morales, 2019). In Germany, less than 20 percent of EFA provided these effective options. About 75.3 percent of EFA was catch crops (ineffective), and another 6.8 percent was leguminous plants (ineffective). The largest effective option was fallow land, with 13.6 percent (Figure 3). A number of farm economic calculations pointed at potential windfall gains for farmers, which on the other hand also suggests an inefficient spending of taxpayers' money (Lakner et al., 2021). A detailed structural analysis of the main impacts of greening on German agriculture concludes that greening has "limited environmental impact and high costs" (Röder et al., 2021).

Overall, the top-down approach of the European Union – defining the greening rules as valid in agriculture across a large continent with many diverse production zones – has proven to be a failure due to low effectiveness. In 2017, the European Court of Editors published a report (Greening: A More Complex Income Support Scheme, Not Yet Environmentally Effective) in which the court described the effects of the greening instrument as having "very limited change in farming practices" (European Court of Auditors, 2017). Overall, the main effective environmental measures were offered within the agri-environmental and climate measures (AECM) in Pillar II of the CAP.

Specifically for Germany, one can show that a large part of the "greening approach" was largely ineffective and inefficient. Still, the introduction of greening had two positive side effects:

1. By moving many simple measures with low requirements into the greening rules, the spending within the AECM

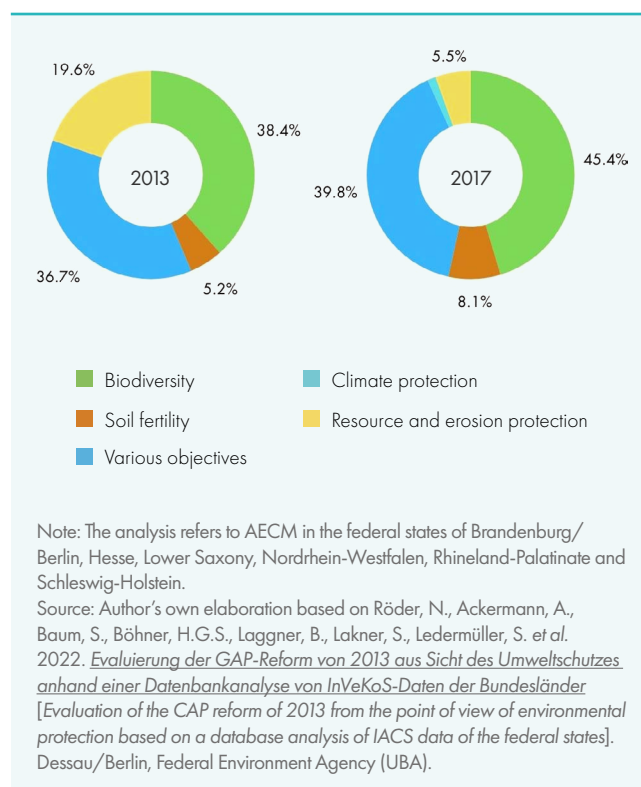
of Pillar II got more effective, since a larger share of the spending was linked to complex measures with strong potential for achieving environmental benefits.²

2. The introduction of greening also opened up options for offering simple environmental measures within Pillar I, which was traditionally linked to income objectives. Drawing conclusions from the learning experience of this rather ineffective top-down measure, the European Commission changed its strategy and offered more flexibility for the new funding period 2021–2027.

3.2. Agri-environment and climate measures

In the funding period 2014–2020/22, the AECM were extended in terms of spending. Roughly EUR 715 million per year was spent for AECM. After major changes in 2014, the AECM in Germany were more focused. Many simple programmes moved into the greening in Pillar I. One consequence of this shift was a stronger focus on biodiversity. Figure 4 shows a comparison of objectives within the AECM in the federal states of Brandenburg/Berlin, Hesse, Lower Saxony, Nordrhein-Westfalen, Rhineland-Palatinate and Schleswig-Holstein.

Figure 4. Share of spending for different objectives within the AECM 2013 and 2017 (percent)



² See details in Röder et al. (2022), pp. 80–83.

The same analysis also shows that the share of complex and specific measures within the investigated federal states have doubled from 15 percent to 30 percent of AEEM spending. However, there are still less complex measures on 40–50 percent of the investigated area³ (Röder *et al.*, 2022). Another issue is the high administrative costs in the implementation of the AEEM compared to Pillar I (Fährmann and Grajewski, 2013). Reducing the administrative burden is an important issue, addressed by the scientific board for Agricultural and Food Policy of the Federal Ministry for Food and Agriculture. The Board recommends the simplification of control procedures but also points at the necessity of controls if public funds are spent. Especially complex measures necessitate complex control systems (WBAE, 2019).

Among agricultural stakeholders, one must currently note certain acceptance problems, as participation has increased only to a small extent. Furthermore, there is a lack of innovative models for the implementation of the AEEM that are attractive for farm managers. The lack of opportunities for profit and risk premiums is also criticized by practitioners and often makes participation unattractive from a financial point of view. In this respect, there is also a clear need for reform and improvement in the AEEM.



³ The share also depends on the target dimension. For biotic factors, the area share of simple measures is 40.9 percent, while for abiotic factors it is 47.3 percent (Röder *et al.*, 2022).



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4

The new green architecture of the CAP: 2023–2027

4. The new green architecture of the CAP: 2023–2027

4.1. The new CAP implementation model 2023–2027

In 2018, the European Commission proposed a new framework for the funding period 2021–2027. The proposal was negotiated and finally decided in June 2021. The new CAP implementation model consisted of four main elements:

1. **A new CAP implementation model:** The new CAP system included more flexibility for Member States to choose and adapt within a set of instruments. Member States had to provide a strategic plan in order to document how the chosen instrument could contribute to the specific national needs and challenges. A large part of the CAP controls would move to the Member State level; Member States, on the other hand, had to report to the European Commission using a set of policy indicators. Within the new implementation model, the indicators served as a key tool to measure policy performance. Indicators would contain figures on **output** ("funded area by measure x" or "funded farms by measure y"), on **results** (e.g. R.32 "share of farms benefiting from CAP investment support contributing to biodiversity") and **impact indicators** (e.g. I.19 "increasing farmland bird populations: Farmland Bird Index"). The Commission also added a list of context indicators, which also contain information on the environmental performance of the CAP. The strategic plans could be seen as a management tool for the European Commission: In the case of weak performance of Member States, adjustments can be undertaken based on the strategy plan.
2. **A new larger set of CAP targets:** The European Commission presented a new set of nine objectives in Article 6 of European Union Regulation 2021/2115 that were linked to farm income and productivity (a–c), the environment (d–f) and rural development (g–i), which added to the old (but still valid) CAP objectives from 1957. The environmental objectives according Article 6 are: d) climate action; e) environmental protection; and f) landscapes and biodiversity (European Commission, 2021).

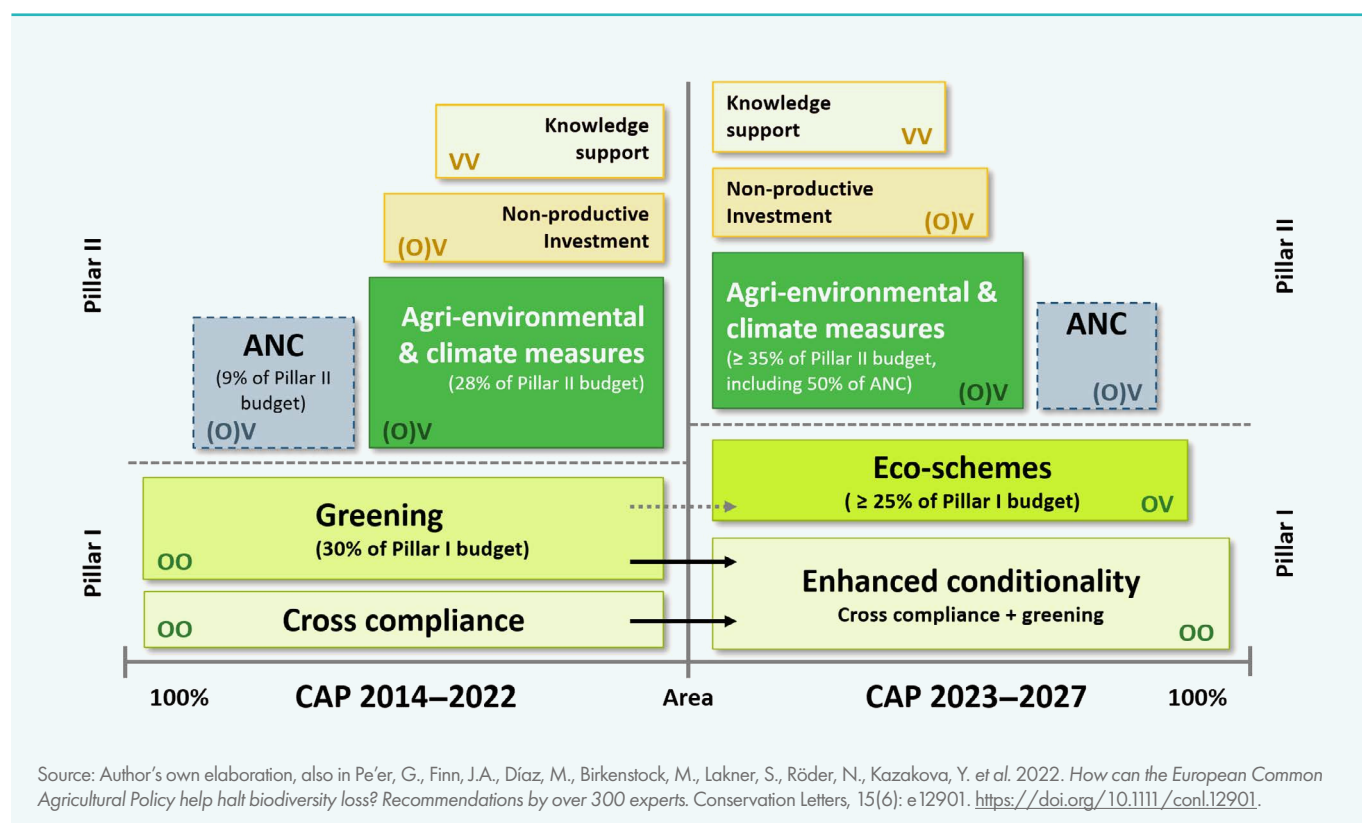
3. **A new multiannual financial framework** 2021–2027 predetermined the financial volumes within both CAP pillars for all Member States. The multiannual financial framework introduced a cut of the agricultural budget in real terms by keeping the spending constant in nominal terms. The final decision in 2021 meant a larger cut in Pillar II of 19 percent and a smaller reduction of Pillar I of 10 percent (Becker, Grajewski and Rehburg, 2023; Matthews, 2020; Negre, 2023).
4. **A new green architecture of the CAP:** The European Commission rearranged the environmental instruments and added a new instrument to the first pillar. The green architecture contained (a) **the conditionality**, which is a set of general rules linked to direct payments, consisting of the already established cross compliance and parts of the former greening. The (b) **eco-schemes** are a new set of voluntary annual environmental programmes within Pillar I. Member States had to provide 25 percent of the direct payments as eco-schemes, but the choice of measures was flexible. The (c) **AECM** within Pillar II were maintained.

In the following section, the aim is to present the green architecture in the German implementation. Figure 5 presents the environmental instruments within the CAP in 2014–2022 and 2023–27.

The new green architecture also aims to achieve a higher environmental ambition. According to article 92 of the strategic plan regulation, Member States must show how they achieve a higher environmental contribution through the strategic plans:

"Member States shall aim to make, through their CAP Strategic Plans and in particular through the elements of the intervention strategy referred to in point (a) of Article 97(2), a greater overall contribution to the achievement of the specific environmental- and climate-related objectives set out in points (d), (e) and (f) of Article 6(1) in comparison to the overall contribution [...] in the period 2014 to 2020" (European Commission, 2021).

Figure 5. Concept of green architecture of the Common Agricultural Policy in 2014–2022 and 2023–2027



4.2. Green architecture in detail

4.2.1. Conditionality

The “enhanced conditionality” contained the former cross compliance and some of the former greening rules, but with a link to direct payments. Farmers receive direct payments if they comply with the rules of good agricultural and environmental conditions (GAEC) and the statutory management requirements. The statutory management requirements require that farmers comply with the many important regulations from a total of 13 legal acts (directive and regulations) relevant for agriculture in the fields of environmental protection, food safety, feed, registration of animals, animal disease control, plant protection and animal welfare (DAFM, 2016). Most of the acts are still valid without cross compliance, but through statutory management requirements they are linked to basic payments. For instance, statutory management requirements are linked to given European Union legislation such as the Nitrate Directive (directive 91/676/EEG) or the Habitat Directive (directive 92/43/EEG). Even if such regulations would be valid anyway, the main effect of statutory management requirements is to enhance compliance with existing laws by an increased number of controls, enforced by direct payments.

From an environmental perspective, the GAECs are the more interesting feature within conditionality. Within the GAECs, a number of slightly more strict regulations were proposed by the

European Commission, though they were weakened during the negotiation process with the parliament and council. Table 1 presents an overview on the main GAECs.

From an environmental perspective, GAEC 7 and 1 continue the greening rules for crop diversification and maintenance of grassland, and GAEC 8 is the continuation of the ecological focus area from greening. Most of the GAEC rules are very similar to the legislative rules; in some cases, there is more flexibility, since exemptions can be applied. GAEC 8 refers primarily to fallow land and landscape elements. If other EFA options like catch crops or leguminous plants are included, the share increases to 7 percent of arable land. The protection of wetland and peatland (GAEC 2) is a new regulation, since it requires Member States to define protected areas for peatland until 2024/2025, which was not the case in 2015–2020. GAEC 3–6 are a continuation of the GAEC rules applied in 2015–2020.

With regards to their main environmental impact, most of the GAEC rules are linked to resource protection: GAEC 3–7 mainly refer to soil and water quality. GAEC 1, 8 and 9 are linked towards biodiversity targets, although from GAEC 1 and 9 there are also impacts to soil quality and storage of carbon dioxide in grassland soils. GAEC 2 (peatland protection) can be mainly linked to climate targets.⁴ Note also that most of the GAECs are not additional, which just maintains but does not add to the actual environmental status.

⁴ For details, see Wiegmann et al. (2023), pp. 21–22.

Table 1. Criteria of good agricultural and environmental conditions

	Content in CAP Reform 2021 Regulation 2021/2115	Content in CAP Reform 2013 Regulation (EU) 1307/2013
GAEC 1	Maintenance of permanent grassland: Maximum decrease of 5 percent compared to the reference year 2018. Ratio refers to agricultural area at national, regional, subregional, holdings level.	Article 45 (2): Member States do not decrease by more than 5 percent compared to a reference ratio to be established by Member States in 2015. Ratio refers to agricultural area at national, regional, subregional, group-of-holdings or holding level.
GAEC 2	Protection of wetland and peatland, carbon-rich soils.	Article 45 (1): Member States designate further sensitive areas situated outside Natura 2000, especially carbon-rich soils.
GAEC 3	Ban on burning arable stubble, except for plant health reasons.	Annex I, GAEC
GAEC 4	Establishment of buffer strips along water courses.	Annex I, GAEC 1 Establishment of buffer strips along water courses
GAEC 5	Tillage management, reducing the risk of soil degradation and erosion, including consideration of the slope gradient.	Annex I, GAEC 5 Minimum land management reflecting site-specific conditions to limit erosion
GAEC 6	Minimum soil cover to avoid bare soil in periods that are most sensitive.	Annex I, GAEC 4: Minimum soil cover
GAEC 7	Crop rotation in arable land, except for crops growing under water. Member States can use exemptions for the greening rules (farms with less than 10 ha and more than 75 percent area share for grassland/fodder exempted).	Article 44 (1): For farms with arable area over 30 ha, minimum three crops, where main crop cannot exceed 75 percent of area and two main crops cannot exceed 95 percent of area. (3) a/b Exemptions for farms smaller than 10 ha and for farms with more than 75 percent grassland or fodder production.
GAEC 8	Min. share (= 4 percent) of agricultural area for non-productive areas or features. Member States can exempt farms with less than 15 ha or more than 75 percent share for grassland/fodder. Fallow land and landscape elements are standard. If catch crops or nitrogen-fixing crops are included, the share increases to 7 percent.	Article 46 (1): Farms with less than 15 ha shall provide at least 5 percent of the arable land of the holding as ecological focus area. (4): Paragraph 1 shall not apply to holdings: (a) where more than 75 percent of the arable land is used for the production of grasses or other herbaceous forage.
GAEC 9	Ban on converting or ploughing permanent grassland designated as environmentally sensitive permanent grasslands in Natura 2000 sites.	Article 45 (1) 1: Member States shall designate permanent grasslands which are environmentally sensitive in Natura 2000 areas. (1) 3: Farmers shall not convert or plough permanent grassland situated in areas designated by Member States under Natura 2000.
	Organic farmers only automatically deemed to comply with the crop rotation GAEC.	Article 43 (11): Organic farmers comply automatically with all greening obligations.

Note: Descriptions are simplified; for precise wording, see the mentioned regulations in detail.

Source: Author's own elaboration based on:

European Commission. 2013. *Regulation (EU) No 1307/2013 of the European Parliament and of the Council of 17 December 2013 establishing rules for direct payments to farmers under support schemes within the framework of the Common Agricultural Policy and repealing Council Regulation No 637/2008 and Council Regulation No 73/2009*. Brussels, European Commission.

European Commission. 2021. *Regulation (EU) 2021/2115 of the European Parliament and of the Council of 2 December 2021 establishing rules on support for strategic plans to be drawn up by Member States under the common agricultural policy (CAP Strategic Plans)*. Amtsblatt der Europäischen Union. Brussels, European Commission. <https://eur-lex.europa.eu/eli/reg/2021/2115/oj>

Overall, many of the GAEC rules primarily continue existing cross compliance or greening rules from the previous CAP period. However, different from the past greening approach, there are not specific payments linked to the GAEC rules. Consequently, the new terminology for the basic payment within the CAP is “basic income support for sustainability” (European Commission, 2021), which highlights the increased environmental ambition through the shifted greening rules.

4.2.2. Eco-schemes and agricultural and climate measures

The **eco-schemes** are voluntary and yearly schemes beneficial for climate, the environment and animal welfare within Pillar I (Article 31(1)). The schemes have to go beyond

the basic statutory management requirements and GAEC (31(6)). According to 31(7), payments can be a) additional to the basic income support or b) compensating for additional costs incurred and income forgone. Transaction costs can be included in the calculation. These rules suggest a broad scope of this instrument and high flexibility for the national implementation. Member States are obliged to use 25 percent of their direct payments to offer a list of eco-schemes; for the first two years (2023/2024), just 23 percent of direct payments have to be used. If shares within Pillar I are not sufficient, Member States can use additional funds for AEEM to comply with the requirement.

The AEEM within Pillar II are maintained. In financial terms, Member States are obliged to spend 35 percent of the spending

within the European Agricultural Fund for Rural Development (EAFRD, i.e. Pillar II) for interventions addressing environmental objectives (see Article 93(1)). Environmental objectives refer to Article 6 and can be interventions like AECM, payments for Natura 2000, payments for areas with natural or other area-specific constraints (ANC) or non-productive measures. Within the European Union system, 50 percent of ANC is accounted for “environmental spending”. The ring-fencing requirement is slightly higher than for 2014–2020, which was 25 percent, but much broader with regard to instruments. In Germany, the AECM need to be specified by the federal states.

Another leverage point for environmental measures is the **flexibilities between pillars** (Article 103). Twenty-five percent of the funds of the European Agricultural Guarantee Fund (Pillar I) or the EAFRD (Pillar II) can be shifted to the other

pillar. An additional 15 percent can be shifted to the EAFRD (Pillar II) if utilized for environmental objectives. If funds are linked to Pillar II, parts of these funds (at minimum 35 percent) have to be linked to environmental purposes.

Overall, the new green architecture and the system of strategic plans offer more flexibility to the European Union Member States and, at the same time, some rules for financial ring-fencing elements (minimum amounts to be spent to environmental measures). The CAP in its current shape provides some opportunities for environmental measures (Röder *et al.*, 2024). Since the European Commission did not clearly specify how a higher environmental ambition shall be interpreted, there also is room for measures pretending to be environmentally beneficial (in other words, for “greenwashing”).





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5

**Implementation of the CAP
green architecture in Germany
and perspectives for food
system transformation**

5. Implementation of the CAP green architecture in Germany and perspectives for food system transformation

5.1. Negotiation process of the strategic plan

The implementation and creation of the CAP Strategic Plans was a complex process given the fact that Germany is a federal state and, legally, agricultural policy is primarily a matter of the federal states ("Bundesländer"), whereas the national level, with its Federal Ministry for Food and Agriculture (BMEL), has a rather coordinating function. In the past, the BMEL was in charge of implementing Pillar I, where the main guidelines until 2023 were given by the European Union, with only little flexibility. The federal states were in charge of writing the rural development programmes of Pillar II using their autonomy and the flexibility of Pillar II and creating programmes that fit the needs and necessities at the state level. The challenge within the new concept was that the strategic plan also contained flexibilities within Pillar I, which added a new aspect to the national competence. The federal states also had to cope with the challenge that problems, necessities and priorities are largely diverging between the federal states of Germany in terms of farm size, production systems, agricultural productivity and problems within the environmental sector. Therefore, the national negotiation of the strategic plan process took quite long, until December 2021. The strategic plan was submitted late, in February 2022, revised until September and finally accepted in November 2022 by the European Commission, which can be regarded as an indication of both a complex negotiation procedure and a diverging interest between federal states and the national government, which also changed in December 2021.

5.2. Decisions on financial flexibilities within the CAP

As described in the previous section, there are many general flexibilities that must be decided at Member State level. For Germany, the main **financial decisions** linked to the environment will be described in the following section; for detailed figures, see Table 9 in the appendix.

Flexibility between pillars: The decision was to increase the shift into EAFRD (Pillar II) from the past share (4.5 percent for 2015–2020) to an average 11.3 percent, distributed as described in Table 2.

The main utilization of these funds will go to AECM, animal welfare and payments for ANC.

Environmental spending in Pillar II: Germany will use EUR 770 million per year for AECM (BMEL, 2022a), which is 46.7 percent of Pillar II. Germany fulfils the 35 percent criterion of the European Union with AECM alone. In the European Union perspective, Germany spent the largest total amount for AECM and is among the leading countries, with a high relative share. Countries with a larger share (Hungary, at 58 percent, and Sweden, at 47 percent) have a much smaller Pillar II. Germany will use another EUR 17.8 million for Natura 2000 payments, which is, in relative terms, rather average. Note that these figures are just based on expenditures from the European Union and national co-funding, but without the specific national funding for AECM or Natura 2000.

Spending for ANC amounts to EUR 110 million. Within the European Union system, 50 percent of ANC is accounted for "environmental spending". Note, however, that in-depth modelling shows that these payments have almost no environmental effects (Pufahl and Weiss, 2009). Non-

Table 2. Criteria of good agricultural and environmental conditions

	2023	2024	2025	2026	2027
Share of Pillar I to Pillar II (percent)	8%	10%	11%	12.5%	15%
Financial volume to Pillar II (millions EUR)	393	492	541	614	737

Source: Author's own elaboration based on data from p. 8 in: BMEL. 2022. *Den Wandel gestalten! Zusammenfassung zum GAP-Strategieplan 2023 – 2027* (Stand: 20. März 2023) [Shaping the change! Summary of the CAP Strategic Plan 2023 - 2027 (Status: 20 March 2023)]. Berlin, Federal Ministry for Food and Agriculture (BMEL).

productive investments add to this another EUR 132 million. Adding AECM, non-productive investments, ANC and Natura 2000 spending, the total environmental spending amounts to EUR 1.6 billion in total, with a share of 59.1 percent, meaning an over-fulfilment of the 35 percent criterion and (again) a leading position, in absolute terms. In relative terms, there are again some other countries, however with a small Pillar II.

Germany is spending roughly EUR 990 million for **eco-schemes, which takes** approximately 23 percent in the first two years and 25 percent later on.

Spending coupled payments for suckler cows, sheep and goats within Pillar I is, in sum, EUR 86 million (2 percent of direct payments). These payments are not directly linked to environmental requirements. Note, however, that many farms with these types of animal husbandry are associated with extensive, biodiversity-rich grassland systems. Other decisions within Pillar I for **redistributive payments** (i.e. first hectare-payments, with EUR 515 million, 12 percent of Pillar I) or **young farmers** (EUR 147 million, 2 percent) have no direct link to environmental objectives.

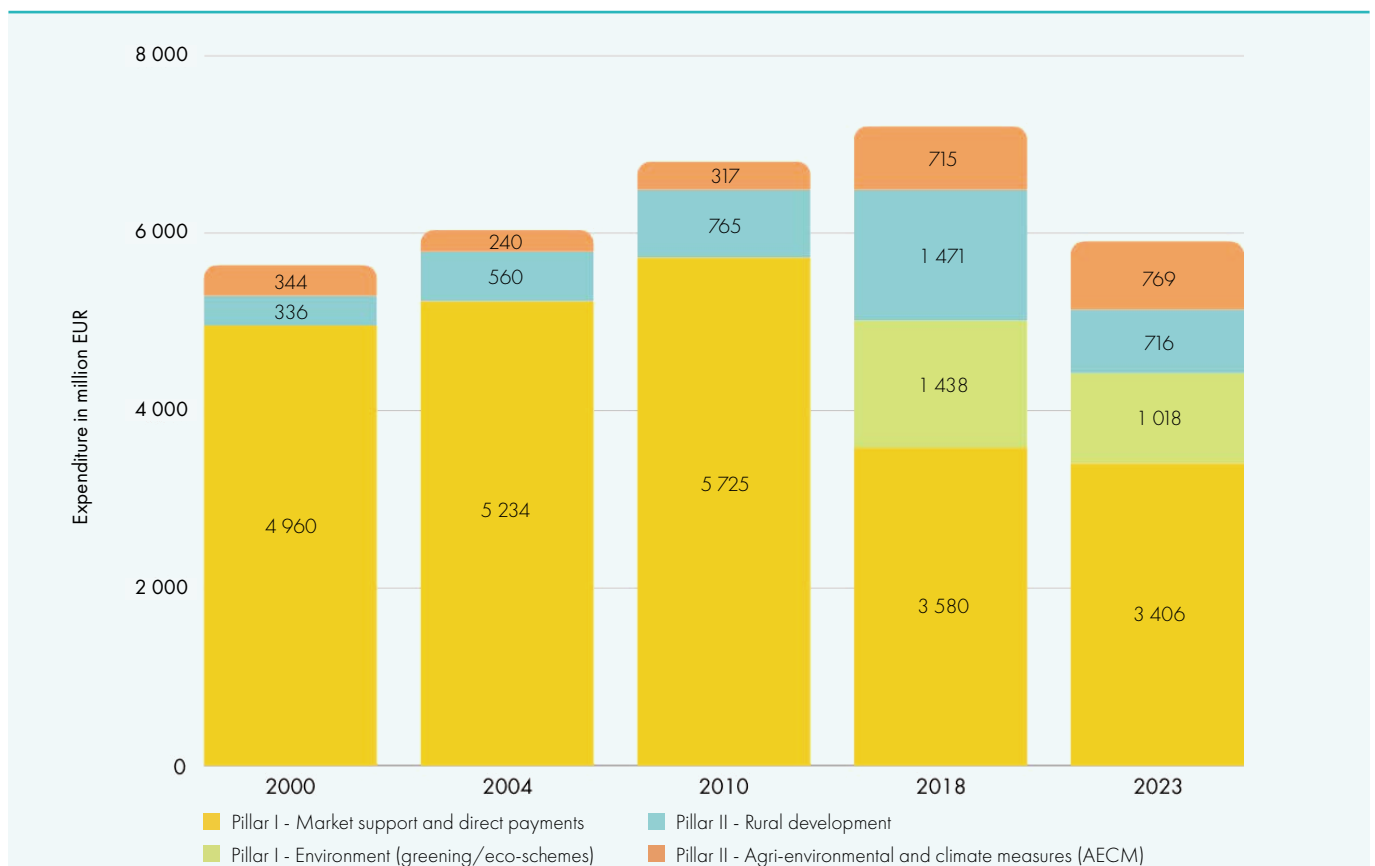
The environmental spending within the CAP is displayed in Figure 6.

Overall, the figures suggest a high priority for environmental spending in Germany. Over time, the environmental spending within the total CAP spending (without ANC) increased from 6 percent in 2000 to 13 percent in 2023. Note, however, that the share of spending is only a rough indication of the actual environmental impact. As described in the previous section, impacts of measures can be evaluated ex-ante by the degree of requirement and complexity and ex-post as well from ecological evaluations.

5.3. Content decisions in the environmental instruments

The implemented eco-schemes are the result of detailed negotiations between the national ministry and the ministries from the federal state level. An overview, with the respective payments, is given in Table 3.

Figure 6. Environmental spending within the CAP in Germany, 2000–2023



Source: Author's own elaboration based on data from:

BMEL. 2001. *Statistical Yearbook Food, Agriculture and Forestry 2001*. Berlin, Federal Ministry for Food and Agriculture (BMEL).

BMEL. 2005. *Statistical Yearbook Food, Agriculture and Forestry 2005*. Berlin, Federal Ministry for Food and Agriculture.

BMEL. 2010. *Statistical Yearbook Food, Agriculture and Forestry 2010*. Berlin, Federal Ministry for Food and Agriculture (BMEL).

BMEL. 2015. *Implementation of the EU agricultural reform in Germany – edition 2015*. Berlin, Germany, Report of the Federal Ministry of Food and Agriculture (BMEL).

BMEL. 2020. *Statistical Yearbook Food, Agriculture and Forestry 2020*. Berlin, Federal Ministry for Food and Agriculture (BMEL).

BMEL. 2022. *Den Wandel gestalten! Zusammenfassung zum GAP-Strategieplan 2023 – 2027* (Stand: 20. März 2023) [Shaping the change! Summary of the CAP Strategic Plan 2023 – 2027 (Status: 20 March 2023)]. Berlin, Federal Ministry for Food and Agriculture (BMEL).

Table 3. Overview of the eco-schemes in Germany as of 2023

Description	Payment (2023)
1. Provision of area for biodiversity	
a) Fallow land: Non-productive areas on arable land beyond obligatory share of GAEC 8 (4 percent): <1 percent / <2 percent / +2–6 percent	Beyond 4 percent non-productive area (GAEC 8) EUR 1 300 / EUR 500 / EUR 300 per ha
b) Flower strips on arable land	a) + EUR 150 per ha
c) Flower strips or area on permanent crops	a) + EUR 150 per ha
d) Old grass strips on permanent grassland <1 percent / <3 percent / 3–6 percent	EUR 900 / EUR 400 / EUR 200 per ha
2. Crop diversification on arable land (including 10 percent legumes)	EUR 45 per ha
3. Maintenance of agroforestry on arable land/permanent crops	EUR 60 per ha
4. Extensification of all permanent grassland	EUR 115 per ha
5. Results-oriented extensive management of permanent grassland based on, at minimum, four regional indicator species	EUR 240 per ha
6. No chemical-synthetic pesticides on arable land/permanent crops	EUR 100 per ha
7. Implementation of Natura 2000 conservation goals	EUR 40 per ha

Source: Author's own elaboration based on BMEL. 2022. *Den Wandel gestalten! Zusammenfassung zum GAP-Strategieplan 2023 – 2027* (Stand: 20. März 2023) [Shaping the change! Summary of the CAP Strategic Plan 2023 – 2027 (Status: 20 March 2023)]. Berlin, Federal Ministry for Food and Agriculture (BMEL).

Eco-scheme 1 (provision of area for biodiversity) in particular is not straightforward. The funding builds upon the existing GAEC 8 regulation of 4 percent arable land as non-productive area. Farms must fulfil the GAEC 8 requirement before they receive any funding for participating with additional percentages for eco-scheme 1 a–d. Therefore, farms receive no payment for the first 4 percent area. For the first additional percent beyond GAEC 8, farmers receive EUR 1 300/ha. They also are offered EUR 500/ha for the second percent and EUR 300/ha for the third through sixth percent. From a farmer's perspective, the payments beyond 4 percent will cross-finance the first 4 percent within the GAEC, which might complicate decisions regarding whether to participate. The funding for flower strips (eco-schemes 1b and 1c) adds to the funding for eco-scheme 1a.

Another complication comes with **eco-scheme 3** (agroforestry). The maintenance of agroforestry is supported, but investment in the instalment of trees or hedges is not supported within Pillar I. Any farm willing to establish such a system must register for funding within Pillar II, which is not necessarily available in every federal state.

The other eco-schemes are rather simple in comparison to the complex requirements of AECM in Pillar II. The fact that the participation is yearly could be attractive from a farmer's perspective, since decisions can be revised in the short term. On the other hand, this short horizon limits the ecological effects of eco-schemes in general.

With respect to the environmental effects, the eco-schemes have complex impacts on different environmental dimensions, as described in Table 4.

The table shows that many of the measures have an impact on different environmental dimensions. Most of the eco-schemes have an intended main impact on biodiversity, while the primary impact of three schemes (1b, 1c, 2) is soil, water and resources. One measure, agroforestry, can be regarded as an adaptation and mitigation measure for climate change. Within the eco-schemes, many schemes provide an additional environmental effect (i.e. the schemes incentivize a change in farming practices). Only eco-scheme 2 (producing with diverse crops) and eco-scheme 6 (no chemical-synthetic plant protection) will most probably not produce any change in production, since only farmers who already produce alike will participate.

A preliminary analysis of the planned participation rates within the eco-schemes shows that on 49 percent of the area, biodiversity support is the main target, while on 35 percent, the protection of soil is the main target. The extensification of grassland (eco-scheme 4) cannot be linked to any environmental dimension. According to Wiegmann *et al.* (2023), the current implementation has only a small effect on climate mitigation. The contributions of Pillar I reduce just 7.8 percent of the total necessary greenhouse gas savings until 2030. Based on the decisions in Pillar I, Germany will not meet the criterion that 40 percent of all CAP payments are climate relevant (Wiegmann *et al.*, 2023).

One current issue of the implementation of the eco-schemes is the low participation rates. In six of the seven eco-schemes, participation is significantly less than planned. Only the results-based extensive use of permanent grassland (eco-scheme 5) shows a participation of 181 percent of the planned area. Natura 2000 (eco-scheme 7) has 86 percent of the planned area, and producing with diverse crops (eco-scheme 2) and

Table 4. Environmental effects of the eco-schemes in Germany

Eco-scheme	Main target	Soil	Climate	Biodiversity	Water	Air	Landscape	Additionality	Main (a+b)
		Potential environmental impacts							
1. Area to improve biodiversity	biodiversity								
a) non-productive area on arable land	biodiversity	o/+	(+)	+	o/+	(+)	+	+	+
b) flower strips on arable land	biodiversity	(+)	o	+	(+)	o	+	(+)	o
c) flower strips on permanent crops	biodiversity	(+)	o	+	(+)	o	+	(+)	o
d) Old grass strips on permanent grassland	biodiversity	o	(+)	+	o/(+)	(+)	+	+	+
2. Producing with diverse crops (10 percent leguminous plants)	soil, water	(+)	o/(+)	o/+	(+)	o	o	o/(+)	o
3. Maintenance of agroforestry on arable land	climate	o/+	+	(+)	o/+	o/+	(+)	+	+
4. Extensive use of farm permanent grassland	resources	o/(+)	o/(+)	+	o/(+)	(+)	(+)	(+)	(+)
5. Results-based extensive management of permanent grassland biodiversity	biodiversity	(+)	o	+	o/+	o	+	(+)	o
6. No chemical-synthetic plant protection	resources	o/+	o/+	(+)	o/+	o	o	o	
7. Support of Natura 2000 area	biodiversity	o	o/+	+	o/+	o	+	o	o

Source: Author's own elaboration from Wiegmann, K., Scheffler, M., Schneider, C., Lakner, S. & Meyer-Jürshof, M. 2023. *Klimaschutz in der GAP 2023-2027: Wirkungsbeitrag und Ausgaben 2*. Auflage [Climate Action within the CAP 2023-2027: Impacts and Expenditure (2nd Edition)]. Dessau/Berlin, Federal Environmental Agency (UBA).

Evaluation is based on:
 Entera. 2021. *Umweltbericht für die Durchführung der Strategischen Umweltprüfung zum Entwurf des GAP-Strategieplans für die Bundesrepublik Deutschland für die Förderperiode 2023-2027* [Environmental Report for the Implementation of the Strategic Environmental Assessment of the Draft CAP Strategic Plan for the Federal Republic of Germany for the Funding Period 2023-2027]. Hannover, Entera.
 Röder, N., Dehler, M., Jungmann, S., Laggner, B., Nitsch, H., Offermann, F., Reiter, K. et al. 2021 b. *Design of Eco-Schemes in Germany - Written evaluation for the BMEL; Vol 1 - Estimation of Potential Ecological and Economic Effects Based on the First Drafts* (Thünen Working Paper 180). Braunschweig, Thünen-Institute.

Notes: Environmental impacts are indicated as follows + = positive impact, ++ = strong positive impact (not given); (+) weak positive impact; o = no significant impact; - = negative impact; -- = strong negative impact (not given); (-) weak negative impact; +/- = both positive and negative impact.

extensive grassland use (eco-scheme 4) also have a quite high participation (67 percent and 65 percent, respectively). However, the other programmes are below 20 percent of the planned area, and the participation for agroforestry was at just 51 ha, while 25 000 ha were planned (BMEL, 2023a).

Payment rates for eco-schemes were calculated based on price information from 2020 and 2021. The invasion of Ukraine on 24 February 2022 caused a sharp increase in agricultural input and output prices, which changed the economic incentives. Given the higher output prices, it can be shown that gross margins for many crops in many regions have increased as well and that payment rates for eco-schemes are too low. Therefore, farmers might be reluctant to participate. On the other hand, the federal ministry decided to increase the payment rate for both 2023 and 2024, putting participating farms in a good position. There is an ongoing debate on payment rates and on the contents as well, especially given the fact that eco-schemes can formally be changed on a yearly basis. Recently, the federal government changed a number of the details in the current eco-schemes in order to increase participation (BMEL, 2023a).

The AECM (Article 65) in Pillar II also are offered in the new funding period, but the design and programming of AECM are still subject to the federal state level. Until now, there has been no comprehensive overview or analysis of all AECM in the 13 federal states from the ongoing funding period that began in 2023. Therefore, no final statement can be made about the potential impacts of this instrument. The general rules on AECM have changed a bit in the new funding period: The federal states are programming measures based on the risks and challenges in each state, resulting in 13 different AECM. The funding of AECM is divided between the European Union and the Member States: Following Article 91(3)b, about 80 percent of the funding is done by the European Union and 20 percent at the Member State level. Due to the federal structure of Germany, the funding is shared between the national government and the federal state government. The national level is providing additional funds through the Joint Task Agricultural Structure and Coastal Protection, which contributes 60 percent to the remaining national funding (20 percent), whereas the federal states take 40 percent of the costs of AECM (BMEL, 2022b).

5.3.1. AECM at the regional level: an example from Bavaria

This section shows the case of the Bavarian AECM, which is an example of the regional design of agri-environmental policies. The respective measures were designed by the state government, and the programme was published in January 2023 (State Ministry for Food, Agricultural and Forestry, 2023). Bavaria is the federal state with the largest agricultural potential, with 3.1 million ha and about 84 000 farms (Destatis, 2021). The gross value added from agriculture (including fishery and forestry) in 2022 amounted to EUR 4 billion, which is 1.3 percent of the total gross value added, slightly above the national average of 1.2 percent for agricultural gross value added. With EUR 648 billion, Bavaria has the second largest gross value added in Germany, following only North Rhine-Westphalia (Destatis, 2023). Including its economic potential and large tax revenues, Bavaria has the capacities to programme, fund and offer a large number of programmes in Pillar II.

Bavaria is quite diverse in terms of agricultural production, including some regions with high productive arable production (e.g. in the region of the Danube valley), intensive grassland

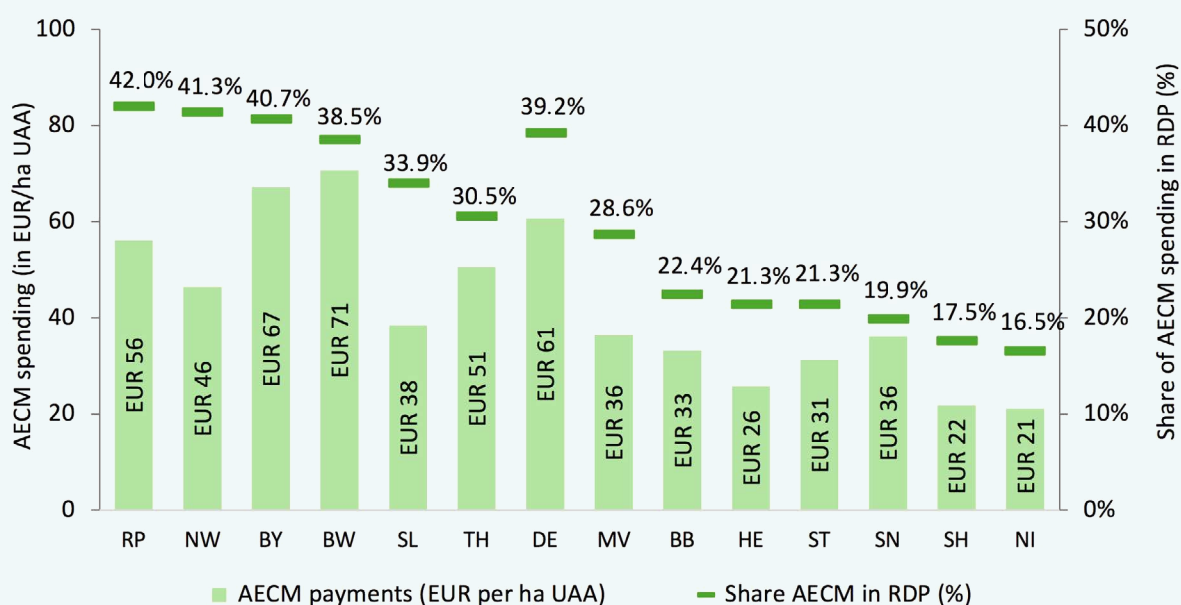
production (e.g. in Allgäu), extensive production (in the Alpine regions and the low mountain range), intensive animal production regions (e.g. in Franken) and wine and hops production. Bavaria must deal with heterogeneity within the agricultural sector and as regards environmental issues.

In the last funding period (2014–2020), Bavaria spent EUR 508.3 million, which is largest amount within the German federal states. Bavaria uses a large share (40 percent) of Pillar II for AECM, which is the largest share together with Baden-Württemberg, North Rhine-Westphalia and Rhineland-Palatinate (Metta and Lakner, 2021). Figure 7 shows the amounts spent per hectare of agricultural used area in the federal states of Germany.

The Bavarian AECM contain a number of small subprogrammes that address various parts of agriculture and environmental objectives.

1. **The cultural landscape programme (KULAP)** includes measures for grassland, arable land, permanent crops (e.g. wine and hops) and pond management that aim to protect biodiversity, improve water quality, protect the soil and maintain the cultural landscape.

Figure 7. Spending for agri-environmental and climate measures, organic farming and Natura 2000 in Pillar II in the federal states of Germany, 2014–2020



Note: RP = Rhineland-Palatinate; NW = North Rhine-Westphalia; BY = Bavaria; BW = Baden-Württemberg; SL = Saarland; TH = Thuringia; DE = Germany; MV = Mecklenburg-West Pomerania; BB = Brandenburg + Berlin; HE = Hesse; ST = Saxony-Anhalt; SN = Saxony; SH = Schleswig-Holstein + Hamburg; NI = Lower Saxony + Bremen; AECM = agri-environmental and climate measures; RDP = rural development programme; UAA = utilized agricultural area.

Source: Author's own elaboration based on:

Metta, M. & Lakner, S. 2021. *Post-2022 CAP in Trilogue Negotiations: Reflections and Outlook for CAP Strategic Plans* (Study commissioned by Martin Häusling, MEP). Brussels/Straßbourg, Arc 2020.

An evaluation of factsheets for rural development from European Commission. 2016. Rural development programmes by country; Factsheets and country files for the member states. Brussels, Belgium, European Commission.

Table 5 contains a number of typical measures. The selected measures show some **degree of heterogeneity**, reflecting the diversity of agricultural structures within Bavaria and addressing the different environmental issues in arable and grassland production and in permanent crops.

The **level of payments** ranges from rather low levels of EUR 60–80/ha for simple measures (like the introduction of another element into a crop rotation) up to EUR 800/ha for rather complex and demanding measures (such as for flower strips or erosion control strips).

KULAP also contains a number of investment measures, such as the instalment of agroforestry systems, landscape elements or extensive orchards.

2. Some **conservation and landscape measures** also are included in the AECM. This part of the programme is the most detailed, which partly overlaps with the former KULAP described above. Some of the measures are more specific to the condition in the federal state. Many of the measures refer to specific preconditions in conservation.

Table 5. Selected measures of the cultural landscape programme in Bavaria, 2023

No	Description of the measure	Payment [EUR/ha] ¹	Area [ha] ²
A. Grassland			
K10/B19	Extensive grassland management for rough grazing (with maximum 1 animal unit per hectare of forage area)	110/225*,**	66 400
K11	Hay-milk – extensive fodder management	100	15 000
BK18	Extensive grassland management alongside the rivers, in sensitive area, no fertilization or chemical pesticides	350	15 000
K16	Extensive grassland management, late first mowing after June 15	320	3 790
K22	Management of alpine pastures and alps	80	12 000
B. Arable land			
K30	Diverse crop rotation with large grain legumes	60	40 000
K42	No chemical plant protection (no herbicides, fungicides or insecticides) in winter grain and winter rapeseed	200	2 500
K50	Erosion control strips	800	3 000
K51	Biodiversity flowering strips	800	3 000
K52	Wild plant mixtures	450	5 000
K56	Perennial flowering areas	400–1 100**,***	8 000
K54	Use of Trichogramma in maize	50	30 000
C. Permanent Crops			
K70	No herbicides in hops production	150	500
K71	No herbicides in wine production	420	500
K74	Viticulture on steep slopes and terraces (level 1–4)	1 000–4 000****	600
K76	Extensive pond management	380–440	–

Notes:

* Planned area for 2023 is according to the strategic plan (Source 1 below).

** Payment levels are based on Source 2 below. Payment levels depend on whether a measure is combined with an eco-scheme.

*** Payment level is dependent on soil quality, with higher payments for more productive soils.

**** Payment level is according to various levels defined by difficulty of production.

Source: Author's own elaboration based on:

¹ BMEL. 2022. *GAP-Strategieplan Bericht 2021* [CAP-Strategic Plan for the Federal Republic of Germany]. Berlin. Federal Ministry for Food and Agriculture (BMEL).

² State Ministry for Food, Agricultural and Forestry. 2023. *Agri-environmental and climate measures (AECM)*. Munich, Germany, State Ministry for Food, Agricultural and Forestry.

Table 6. Selected conservation measures within agri-environmental and climate measures in Bavaria, 2023

No	Description of the measure	Payment [EUR/ha] ¹	Area [ha] ²
G11	Extensive arable land use for field breeders and field wild herbs	530	–
G12/13	Fallow land on arable land with self-vegetation for species protection reasons. No cultivation between 16 March to 31 August, inclusive.	500–750	–
G/D/E19-25	Extensive mowing of habitats of conservation value. Different mowing dates in spring, from June to September.	260–450	–
G/D30	Result-oriented grassland use. Conservation of six indicator species.	340	310
G/D31	Extensive grazing of habitats of conservation value by sheep, cattle, water buffalo, horses, donkeys and camelids. Restricted supplementary feeding.	440	–

Source: Author's own elaboration based on:

¹ State Ministry for Food, Agricultural and Forestry. 2023. *Agri-environmental and climate measures (AECM)*. Munich, Germany, State Ministry for Food, Agricultural and Forestry.

² BMEL. 2022. *GAP-Strategieplan Bericht 2021* [CAP-Strategic Plan for the Federal Republic of Germany]. Berlin. Federal Ministry for Food and Agriculture (BMEL).

The programme includes far more options for combining the measures with, for example, no fertilization, restricted plant protection or restrictions in animal units per hectare.

3. Support of organic farming: Another subprogramme contains measures to support the conversion or maintenance of organic farming systems. In 2019, a public initiative launched a referendum for biodiversity. The state government took over the law and (among other measures) announced the target of increasing the share of organic farming to 30 percent by 2030

(State Ministry for Environment and Consumer Protection, 2022). In 2021, 11 496 farms worked according to organic farming standards on 407 093 ha of land (13.4 percent of the total agricultural land). Within Germany, Bavaria is among the federal states with a larger share of organic farming; states like Hesse (16.5 percent) and Brandenburg (16.6 percent) have even high percentages. The national average is 11 percent (Kunert, 2023). Table 7 shows a list of measures for organic farming.

Table 7. Measures to support organic farming in Bavaria, 2023

Abbreviation	Measure	Payment [EUR/ha] ²	Area [ha] ¹
O10	Conversion to organic farming – grassland/arable	423	56 981
O10	– vegetables	630	487
O10	– permanent crops	1 300	350
O10	Maintenance of organic farming – arable land	314	187 059
O10	– grassland	284	150 128
O10	– vegetables	485	3 584
O10	– permanent crops	1 000	2 596
O12	Support for the organic certification system	EUR 40/ha, max. EUR 600	100 000

Source: Author's own elaboration based on:

¹ BMEL. 2022. *GAP-Strategieplan Bericht 2021* [CAP-Strategic Plan for the Federal Republic of Germany]. Berlin. Federal Ministry for Food and Agriculture (BMEL).

² State Ministry for Food, Agricultural and Forestry. 2023. *Agri-environmental and climate measures (AECM)*. Munich, Germany, State Ministry for Food, Agricultural and Forestry.

4. The support of peatland farming is supposed to support the process of rewetting peatlands and moors. Bavaria is among the five federal states with a significant share of peatland. As a climate measure, the conversion from arable to grassland and the management of rewetted grassland or wet grassland is supported. The measures themselves are not finally described.

Table 8 provides an overview of the total spending and area within the AECM in Bavaria, sorted according to different targets.

Overall, the focus in terms of spending and area lies on the targets of conservation and biodiversity measures and on the support for organic farming. This might be seen as complementary to the eco-schemes, where water and soil protection play a more important role. In total, Bavaria offers 180 different measures, and this involves high administrative costs. Particularly, the measures on permanent crops and conservation cover just a small proportion of agricultural land, with 300–500 ha within the federal states. A number of measures will result in a small number of applicants or cover only a small proportion of land. A rich federal state, Bavaria can offer a large number of

detailed programmes, going beyond most of the other federal states within Germany. Within the European Union, Bavaria might be one of the federal states/regions/departments with the most diverse programmes. The programme addresses the total variety within the federal state. Note that some of the programmes involve some windfall gains, where the environmental value added is low and the programme involves high-income effects for farmers, which is critical from a taxpayer's perspective. Other German federal states have fewer measures, but also a lower heterogeneity within one state; restricted financial resources in eastern German federal states usually lead to fewer measures.

Overall, the German implementation shows some degree of environmental ambition as viewed from a European Union perspective. The CAP spending decisions suggest that Germany is among the ambitious European Union Member States. Still, the design of the eco-schemes shows systematic weaknesses in programming and design, especially with respect to the objective of climate protection. Since AECM cannot be included in this assessment, a lot will depend on the potential effects of AECM in Pillar II.

Table 8. Measures to support organic farming in Bavaria, 2023

	Area / animals ¹ [thousands ha]		Expenditure 2024–2028 ² [thousands EUR]		EUR/ha ³
Climate protection / grassland	301	5.0%	60 450	5.3%	201
Water quality: flower strips, input reduction	320	5.4%	61 700	5.4%	193
Soil protection	589	9.9%	77 000	6.8%	131
Conservation and biodiversity measures	1 932	32.4%	353 556	31.1%	183
Support organic farming	2 827	47.4%	561 120	49.3%	198
Support animal welfare	169	–	24 407	2.1%	145
Sum	5 969		1 138 233		

Note: All figures refer to area, except for “support animal welfare”, which refers to animal numbers.

Sources: Author's own elaboration based on figures from:

¹ State Ministry for Food, Agricultural and Forestry. 2023. Agri-environmental and climate measures (AECM). Munich, Germany, State Ministry for Food, Agricultural and Forestry. <https://www.stmelf.bayern.de/foerderung/foerderung-von-agrarumweltmassnahmen-in-bayern/index.html>

² BMEL. 2022. GAP-Strategieplan Bericht 2021 [CAP-Strategic Plan for the Federal Republic of Germany]. Berlin. Federal Ministry for Food and Agriculture (BMEL) https://www.bmel.de/SharedDocs/Downloads/DE/_Landwirtschaft/EU-Agrarpolitik-Foerderung/gap-strategieplan-version-2-0.pdf?__blob=publicationFile&v=5

³ Calculated value of EUR expenditure per hectare (or animal, in the case of “support animal welfare”)



6

Beyond CAP: The Green Deal and Farm-to-Fork

6. Beyond CAP: The Green Deal and Farm-to-Fork

There also are other policy initiatives and measures beyond the framework of the Common Agricultural Policy.

1. At the European Union level, the European Commission, under the lead of President Ursula von der Leyen, launched the Green Deal initiative in December 2019. Referring to the challenges in the agricultural sector, the Commission published the Farm-to-Fork-Strategy and the Biodiversity Strategy 2030 in May 2020, outlining a plan for improving the environmental balance of the sector (European Commission, 2020a, 2020b). The strategy proposes a number of objectives that potentially can contribute to a better environmental performance, but it also contains a number of conflicting targets. Below are some highlights from the strategy:

- reduction of the application and risks of **chemical pesticides** by 50 percent
- reduction of **mineral fertilizer** by 20 percent
- increase of **organic farming** to a European Union-wide production share of 25 percent
- provision of at least 10 percent of the agricultural area under high-diversity **landscape features**

The Farm-to-Fork-Strategy also links with the 2030 **biodiversity strategy** of the European Union.

From a legal perspective, the reduction of pesticides will be implemented through a revision of the directive for the sustainable use of pesticides (European Commission, 2009), and the biodiversity targets will be achieved by the Nature Restoration Law, which was proposed by the European Commission in June 2022 (European Commission, 2022b). Both regulations are still under negotiation at the European Union level. In both cases, these objectives and strategies could come at the cost of reduced production potential within the European Union, which was described by a number of studies, including Henning *et al.* (2021). There are conflicting targets to be resolved, and the strategy therefore remains subject to an ongoing political and scientific debate (Candel, 2022).

Within the Green Deal, the Nature Restoration Law also is a subject of political debate. For Germany, this law could improve the weak status of many conservation areas, as described in the introduction.





At the national level, many policy initiatives and processes go beyond the framework of the CAP. Political priorities can be observed in the organic sector, biodiversity action and a new law on animal husbandry.

Organic farming: The new elected coalition has announced a strong emphasis on the organic sector and an increase in the share to 30 percent of the agricultural land, which is beyond the European Union target. This links to already existing strategies: In 2017, the Federal Ministry for Food and Agriculture published a first strategy on organic farming that provides a full set of policy instruments to increase and strengthen the organic sector. The new coalition has continued and deepened this process. The main fields for action, according to the Federal Ministry for Food and Agriculture (BMEL, 2023b) are:

- Improve the coherence of the organic legal framework.
- Facilitate access to organic farming.
- Exploit and further expand the demand potential.
- Improve the performance of organic farming systems.
- Adequately reward environmental services.

A potential risk of this strategy can be seen in the relation of supply and demand: If supply is increased without comparable increases in demand, prices and farm incomes might suffer (Moschitz *et al.*, 2021). Beyond a balanced organic market, the question of innovation in the organic sector also is not yet sufficiently reflected in the strategies.

Biodiversity and climate change mitigation: As described in the introduction, the issue of declining biodiversity received a lot of media attention after the Krefeld study, which changed the political discourse towards more awareness on the topic. The federal government launched a program for biodiversity, supporting action and initiatives for biodiversity and ecosystems (BMUV, 2022). Some national actions, such as a biodiversity monitoring centre, have been put in place; at the state level, some bottom-up initiatives could achieve more action in favour of additional conservation, but still with no clear positive effect. However, there is an action programme called Natural Climate Protection that will offer roughly EUR 1 billion per year for peatland rewetting and biodiversity action (BMUV, 2023).

Animal welfare: The new coalition has started a reform of the animal husbandry sector and developed a mandatory label for different types of animal husbandry. The drafted Act on Animal Husbandry Labelling aims to create four types of stable systems such that consumers can make decisions based on the different stable types. The new system contains production that takes place a) indoors; b) indoors with space; c) indoors with fresh air; d) outdoors in runs or pasture; and e) in accordance with European Union laws on organic husbandry (BMEL, 2023c). The main challenge will remain in relation to market demand and the long planning horizon for farmers, but labelling can create market transparency and help organize the market according to consumer preferences.



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Discussion and conclusions

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The greening of the German agricultural policy has gone through a long process. The presented experience shows how to improve the environmental dimension of agricultural ecosystems, but it also highlights failure and potential mismanagement through vague policy design. The long learning history of the implementation of agri-environmental schemes in the broader sense shows that a systematic and effective approach for agri-environmental policy is important.

The changes that were introduced by the last CAP reform in 2021 were motivated by a public demand for transformation. Some environmental issues already have been known for a long time, such as the problem of regional nutrient overflows described in the 1980s and 1990s. Other challenges are rather new, such as the change in perception of animal production systems. However, the transformation of the animal production sector lies outside of the CAP and is done by national policy instruments and funds. The new evidence of the decline of biodiversity and of the new role of climate change has been moderately picked up by the Great Coalition 2018–2021 and enforced by the new coalition from 2021 onward. Many of the implemented environmental and sustainability policies are far from being optimal and ongoing projects. However, some of the projects, such as the establishment of the organic farming sector with links to the markets, have become a moderate success in picking up such existing problems as biodiversity decline or nutrient overflows. However, this remains subject to further development. From an institutional point of view, science and civil society can play a constructive role in this and can support the process of greening the agricultural sector and

thereby enhancing the acceptance of modern farming. On the other hand, we won't achieve societal acceptance of modern farming if environmental issues are not addressed appropriately. Learning from errors can help improve the environmental performance of the sector and help to gain the acceptance of society. Some general recommendations regarding the greening of agricultural policy can be given:

1. **Precise objectives and targets** based on scientific evidence and recommendations could help focus agricultural funds on the key challenges of countries.
2. **Policy design at the federal state or regional level** could be important in (large) countries within which ecological challenges are diverging, which is not always the case. Accompanying evaluations and data provision can help in the evaluation of ongoing agri-environmental schemes.
3. **The calculations of payment levels** are a crucial element for setting the right incentives and for transparency regarding the utilization of public funds.
4. **Administration and control** are necessary, since funding is based on taxpayers' money and controls are critical for transparency.
5. **Continued evaluations** have helped over the years to improve programmes while creating transparency. Monitoring is based on indicators and data, which are necessary elements for science to support and enhance the learning process of policy.

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Appendix

Appendix table 1. CAP budgets for Germany in the funding period 2023–2027

in millions EUR	2023	2024	2025	2026	2027	Sum
1) Direct payments (Pillar I)						
Coupled payments (sheep/goats/suckler cows, roughly 2 percent)	88	87	86	84	84	429
Young farmer support (roughly 3 percent)	147	147	147	147	147	737
Redistributive payments (12 percent)	531	525	516	501	501	2 574
Eco-schemes (23 percent)	1 018	1 006	989	961	961	4 935
Basic payments	2 640	2 609	2 562	2 485	2 485	12 781
Sum - direct payments (Pillar I)	4 424	4 374	4 300	4 178	4 178	21 456
2) EAFRD (Pillar II)						
Original outlay	1 092	1 092	1 092	1 092	1 092	5 462
Transfer to Pillar II (from previous year)	393	492	541	614	737	2 777
Sum - EAFRD (Pillar II)	1 486	1 584	1 633	1 706	1 829	8 239
3) Sector programmes						
Fruits and vegetables	46	46	46	46	46	230
Wine	37.4	37.4	37.4	37.4	37.4	187
Beekeeping (honey)	2.8	2.8	2.8	2.8	2.8	14
Hops	2.2	2.2	2.2	2.2	2.2	11
Sum - sector programmes	88	88	88	88	88	442
Sum - CAP expenditure	5 998	6 047	6 022	5 973	6 096	30 137

Source: BMEL. 2022. *GAP-Strategieplan Bericht 2021* [CAP-Strategic Plan for the Federal Republic of Germany]. Berlin, Federal Ministry of Food and Agriculture (BMEL).

Appendix table 2. Participation and area within the eco-schemes in Germany, 2023

Eco-scheme	Measure		Applications	Area	Planned area	Share (%)
ES 1 Area to improve biodiversity	a) Non-productive area on arable land	area up to 1 %	16 320	20 255	101 287	20%
		area >1–2%	11 553	13 333	70 646	19%
		area >2–6%	7 429	19 101	140 340	14%
	b) Flower strips on arable land		1 170	1 280	176 370	1%
	c) Flower strips on permanent crops		94	73	9 283	1%
	d) Old grass strips on grassland	area up to 1%	3 970	2 542	45 990	6%
		area >1–3%	2 954	2 662	80 429	3%
		area >3–6%	1 492	1 844	78 829	2%
ES 2 Producing with diverse crops (10% leguminous plants)			12 151	1 729 527	2 673 689	65%
ES 3 Maintenance of agroforestry on arable land			67	51	25 000	0%
ES 4 Extensive use of farm permanent grassland			33 772	1 322 959	1 978 081	67%
ES 5 Result-based extensive use of permanent grassland			42 501	1 156 572	640 605	181%
ES 6 No chemical-synthetic plant protection	a) arable land, permanent crops		6 403	101 007	891 525	11%
	b) Grassland, fodder production on arable land		21 997	204 271	397 122	51%
ES 7 Support of Natura 2000 area			33 752	1 133 555	1 312 012	86%

Source: BMEL. 2023. *Participation in Eco-Schemes according to provisional application data of the federal states without controls and plausibility checks*. Data of 01.06.2023, Berlin, Federal Ministry of Food and Agriculture (BMEL).

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