

**FEATURED ARTICLE**

# Attaining policy integration through the integration of new policy instruments: The case of the Farm to Fork Strategy

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**Abstract**

This article departs from the assumption that the challenge of putting the Farm to Fork Strategy (F2F) into action stems from the broader challenge of attaining cross-sectoral policy integration. Policy integration has been part of the EU's policy approach for a long time and has predominantly been achieved in the form of environmental policy integration (EPI). However, the scope of the F2F extends beyond EPI, as it includes the integration of climate-related concerns into sectoral policies, for instance. Consequently, we contend that attaining policy integration in the case of the F2F is particularly challenging and calls for an innovative approach to policymaking.

**KEYWORDS**

collective schemes, F2F, policy integration, procedural instruments, substantial instruments

**JEL CLASSIFICATION**

Q10, F15, O44

Improving the sustainability of food systems is widely recognized as one of the most significant challenges of this century, alongside interrelated issues such as biodiversity loss, climate change, food security, malnutrition, and soil degradation. In the past two decades, there have

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been calls for (better) integrated approaches to these challenges. For example, in 2000, the United Nations (UN) adopted the Millennium Declaration, committing nations to the achievement of eight Millennium Development Goals—which range from eradicating extreme poverty and hunger to ensuring environmental sustainability—by 2015. When this 15-year period ended, the United Nations adopted the 2030 Agenda for Sustainable Development, which consists of 17 sustainable development goals (SDGs). The SDGs reiterate the goal of ending hunger and promote food security, healthier nutrition, and sustainable agriculture (Nilsson et al., 2016; Nilsson & Persson, 2017).

Against this backdrop, the European Commission published the Farm to Fork (F2F) strategy in 2020. This agricultural strategy is an integral part of an ambitious agenda for transformative development, the European Green Deal, which is a set of policy initiatives aiming to turn Europe into the first climate-neutral continent. The F2F encourages the transition toward a sustainable food system by reducing dependency on pesticides and antimicrobials, reducing nutrient losses, promoting organic farming, improving animal welfare, reversing obesity trends, reducing food waste, and reversing biodiversity loss (European Commission, 2020). The objectives set out in the F2F are to be achieved mainly through reforms of existing policies, including the EU's Common Agricultural Policy (CAP)<sup>1</sup>.

The challenge of shifting toward a sustainable food system and deploying the F2F Strategy by amending existing policies stems from the broader challenge of attaining cross-sectoral policy integration. In brief, policy integration refers to the question of how policy problems can be addressed more effectively by taking coordinated and collaborative action in different sectors. Policy integration can aim to avoid negative interactions between sectoral goals (least ambitious scenario) or strive for positive interactions between them so that they mutually reinforce each other (most ambitious scenario) (Nilsson et al., 2016). Scholars use different terms to refer to policy integration, including boundary-spanning policy regimes, comprehensive planning, holistic government and governance, joined-up government, the nexus-approach, policy coherence, policy mainstreaming, and the whole-of-government approach (for an overview, see Tosun & Lang, 2017). The different terms originate from differences in the academic disciplines and the policy sectors studied. They are also time-sensitive since they are affected by changes in the terms that political parties use in their agendas.

Policy integration has been part of the EU's approach for a long time and has predominantly been achieved in the form of environmental policy integration (EPI). EPI refers to the integration of environmental aspects into sectoral policies, such as energy and agricultural policy. Existing research often concludes that the EU has struggled to attain EPI in practice, not least in relation to the CAP (Alons, 2017; Jordan & Lenschow, 2010; Persson et al., 2018). Therefore, before we consider the integration of F2F objectives into the CAP, it is important to understand the barriers to such an endeavor. The EU has applied a number of environmental policy instruments to the CAP over the years. However, environmental concerns were not the main driver behind their introduction—their actual purpose was to legitimize income support for farmers (Feindt, 2010). Unsurprisingly, the policy instruments' effectiveness has been limited (Alons, 2017; European Court of Auditors, 2017). This disappointing track record suggests that innovative policy ideas are essential to the successful integration of environmental concerns into the CAP. Furthermore, the SDGs explicitly call for cross-sectoral policy integration—labeled as “policy coherence”—in Target 17.14, and the F2F Strategy aims, *inter alia*, to implement the SDGs (Tosun & Leininger, 2017). Therefore, the integration of environmental concerns into the CAP has become a necessity. Against this backdrop, we contend that attaining policy integration in the case of the F2F is particularly challenging and calls for an innovative approach to

policymaking, in which policy instruments combine substantial and procedural elements (Howlett, 2017). According to the literature on policy integration, procedural instruments enhance coordination and preserve the consistency of the policy mix, which is the capacity of multiple instruments to reinforce rather than undermine each other (Candel & Biesbroek, 2016; Howlett & Ramesh, 2014). While the F2F Strategy uses a reasonably comprehensive definition of sustainability in the agri-food sector, we limit our analysis to ecosystem services in the conceptual discussion since they tie in specifically with the environmental aspects of the F2F and make cross-sectoral policy integration a necessity. In the empirical illustration, we focus on one type of ecosystem service, namely biodiversity services, which lend themselves very well to addressing the challenge of using policy instrument mixes to attain policy integration.

The remainder of the article is structured as follows. We first lay out a general conceptual framework on cross-sectoral policy integration. Subsequently, we elaborate more specifically on the notion of EPI and how it has been practiced in the CAP, to obtain an understanding of the challenges facing EPI in the context of the CAP. We then turn to the policy instrument mixes that can be used to attain EPI and illustrate our argument with a case study on biodiversity protection in the north of Germany. In the final section, we provide some concluding remarks.

## POLICY INTEGRATION FRAMEWORK

Numerous issues require policy responses that align with goals that originate from and/or address different policy sectors. Such “integrated” policy responses can refer to policies in different sectors that do not produce conflicting incentive structures (least ambitious scenario) or that mutually reinforce each other (most ambitious scenario) (Nilsson et al., 2016). Policy integration can also be attained by adopting one instrument that meets policy goals in different sectors. For example, in the early 2000s, biofuels were expected not only to reduce greenhouse gas emissions, fulfilling climate and energy policy, but also to increase the diversity of energy supply (Tosun, 2018) which became a goal related to energy policy following the EU’s enlargement rounds of 2004 and 2007, when countries that were particularly vulnerable to disruptions in energy supply joined the union. Lastly, biofuels were also intended as a measure to provide farmers with a stable source of income, which represented a goal in agricultural policy (Skogstad, 2017).

The different types of policy integration are best captured by the institutional logic underpinning them with regard to the involvement of various policy communities (Cairney, 2021). Policy communities are defined as relatively exclusive groups that interact frequently and are therefore characterized by a high degree of cohesion and the exchange of resources between members (e.g., Grant & MacNamara, 1995). Consequently, the members of a policy community will have a common understanding of the problems within a particular sector and thus a shared preference regarding the type of policy response to be adopted. In cross-sectoral policy integration, integrative approaches to policymaking naturally entail the involvement of different policy communities. Since this process depends on various factors, such as the cohesion of the individual policy communities or the difference between their preferred policy responses, the interaction between them can take different forms and produce different dynamics. While a systematic assessment of the *politics* of policy integration lies outside the

purview of this study, it is worth highlighting that the forms of cross-sectional policy are an outcome of various political processes.

Drawing from the literature on public administration, we differentiate between policy integration through coordination, cooperation, and collaboration in order to capture the basic logics of how different policy communities become involved in policymaking (see, e.g., Keast et al., 2007; McNamara, 2012).

Policy integration through *coordination* indicates a situation in which one organization aligns its action with the actions of other organizations to achieve a common objective. This type of policy integration requires the sharing of information and possibly also resources as the degrees of coordination intensify. Policy integration through *cooperation* refers to a situation in which organizations with similar goals pursue similar strategies to achieve them, which can result in proposing a policy that unifies various sectoral goals. Cooperation refers to short-term and informal or voluntary relationships between organizations or different parts of the same organization. In contrast, *collaboration* describes a long-term relationship between organizations that is accompanied by high levels of interdependency and power symmetry (Martin et al., 2016).

Collaboration and coordination are the two forms of policy integration that are likely to become dominant in the context of the F2F Strategy. Policy integration through coordination will result in a modification of the policymaking process in such a fashion that a given sectoral policy will need to be scrutinized in terms of its potential impact on other sectors, thereby giving actors from other policy sectors a (soft) veto power. The dynamics of policy integration through coordination are best observed using environmental or climate impact assessments (see, e.g., Turnpenny et al., 2009). This instrument requires sectoral policies or programs to be subjected to an ex-ante evaluation before they are pursued further, which can have a significant impact on policymaking (Radaelli, 2010).

Like policy integration through coordination, policy integration through collaboration is likely to change both policymaking and policy implementation. This form of policy integration will entail the development of an organizational structure that facilitates sustained communication and collaboration. Furthermore, it will entail a somewhat protected process of policy formulation since the various sectoral policy communities will have to agree on the joint policy measure. It is unlikely that all sectoral policy communities involved in policy formation will have an equal say, making power asymmetries almost inevitable. Lastly, the implementation of such integrated policies could be difficult since not only must the implementing bodies collaborate, but also the target groups may be unwilling or unable to comply with their stipulations if their perspectives and/or needs are not adequately considered. This is most likely to be the case during the process of policy formation, especially if power asymmetries are involved.

However, we can identify scenarios in which the implementation of integrated policies will be either smooth or rough depending on the policy mixes used for attaining cross-sectoral policy integration. We theorize on this in the subsequent sections.

## THE CHALLENGE OF EPI IN THE CAP

A series of reforms of the CAP over the last three decades has gradually introduced environmental requirements as a condition for receiving direct farm payments, known as cross-compliance and greening. Funds for specific agri-environmental schemes (AES), such as subsidies for organic agriculture, have also increased over time. However, at a general level, the

environmental impact has been very modest, which begs the question: Why has it been so difficult to pursue effective EPI in the CAP?

The CAP is composed of two pillars. Pillar I is for direct payments to farmers. Pillar II, which consumes 23% of the 2021 CAP budget, consists of support schemes for rural development and is split into three categories: (i) agricultural competitiveness; (ii) sustainable management of natural resources and climate action; and (iii) balanced territorial development of rural economies and communities. Measures under Pillar I have always consumed the greater part of the CAP budget (77% of the 2021 CAP budget). Hence, Pillar I is where there is the greatest financial potential for using farm subsidies as incentives for pursuing a green transition.

When direct farm payments, under what was later to become Pillar I, were introduced in 1992 to compensate farmers for cuts to minimum prices in the arable and red meat sectors, they exclusively served as a means of supporting farmers' incomes. The Agenda 2000 reform, adopted in 1999, allowed member states to pay farmers directly if they had complied with requirements pertaining to the environment, animal health and welfare, and food safety (known as cross-compliance). However, few member states did this.

In the 2003 CAP reform, it became mandatory for the member states to introduce cross-compliance. According to Feindt's (2010) assessment, this decision can be regarded as the beginning of an era in which public good provisions were linked to all direct farm payments under Pillar I. However, it should be noted that the impact was limited, as the cross-compliance requirements necessitated little change in agricultural practices (Alons, 2017).

Furthermore, EPI took place in the 2013 reform of Pillar I, though only to a limited extent. The direct farm payment was split into a basic payment, which was issued if the existing cross-compliance requirements (70% of the direct payments) had been met, and an optional "greening" payment (30%). To be eligible for the "greening" payment, individual farmers were required to maintain permanent grasslands, practice crop diversification on arable land, and establish the so-called "ecological focus areas" of at least 5% of their arable area (small farms exempted) (Greer, 2017). For the large majority of farmers, these requirements were relatively easy to comply with (Alons, 2020). Hence, cross-compliance and greening made little difference in motivating farmers to introduce more environmentally friendly farm practices (Alons, 2017). As the European Court of Auditors (2017) concluded, greening was "unlikely to significantly enhance the CAP's environmental and climate performance" (p. 46) and "greening remains, essentially, an income support measure." (p. 22).

The F2F Strategy was released in May 2020 as part of the Green Deal and aims to set the course for the transition to a sustainable food system. Together with the Biodiversity Strategy, released at the same date, the F2F Strategy sets out future directions for the CAP, including integrating stronger environmental measures into agricultural policy. The strategy is remarkable within the context of the CAP because of its ambitious and specific transition goals, which are to be achieved by 2030. The Commission proposes to reduce the overall use of chemical pesticides by 50% (including by 50% for the most hazardous ones), have 25% of the agricultural land farmed organically, significantly increase organic aquaculture, reduce nutrient losses by 50%, stop deterioration in soil fertility, restore at least 10% of the agricultural area to high-diversity landscapes, and reduce sales of antimicrobials for farmed animals and in aquaculture by 50% (European Commission, 2020).

Most of the goals set out in the F2F Strategy are to be achieved through measures in both pillars of the CAP as well as through other policies. The post-2022 reform, agreed in June 2021, stipulates that 35% of the national Pillar II budget must be spent on environmental and animal welfare measures. The major change has taken place in Pillar I, as direct farm payments have

been divided into a payment with conditionality (essentially the previous cross-compliance and greening measures) and eco-scheme payments that must amount to a minimum of 25% of the Pillar I expenditure. Member states will be responsible for preparing national strategic plans, following guidelines issued by the European Commission (European Commission, 2021). The strategic plans must include national measures for the eco-schemes and Pillar II that aim to realize the goals set out in the F2F Strategy (as well as in the Biodiversity Strategy and the Climate Law). As part of the national strategic plans, each member state must define a set of practices at farm level, which qualify for eco-scheme payments.

Some had high hopes that the F2F Strategy would set a new course for the CAP (Schebesta & Candel, 2020), but there were also skeptics who argued that the Strategy, as a blue print for a more sustainable farm industry, put too little emphasis on farm system transformation (Dobbs et al., 2021; Moschitz et al., 2021). Further, concerns were raised that member states would water down the environmental measures (Heyl et al., 2020; Pe'er et al., 2020). The post-2022 reform, agreed in June 2021, was meant to deliver on the ambitions outlined in the F2F Strategy but for many the reform was disappointing. For instance, environmental NGOs have slammed the reform for being a “disastrous deal” and a “major policy failure” (*Agra Focus* July 2021, p. 23).

The root cause of the limited ability of the CAP to respond to the sustainability ambitions of the F2F Strategy can be found in the policy's exceptionalist legacy. Exceptionalism is a political belief that assigns a special status to a group or an industry. Farming is regarded as an exceptional and hazardous industry because it is exposed to unpredictable and unstable weather and market conditions. This justifies exceptional policies for agriculture (Skogstad, 1998). With environmental requirements layered on to the farm-income support scheme, the CAP can no longer be considered purely exceptionalist. Rather, it resembles post-exceptionalism, which Daugbjerg and Feindt (2017, 1567) define as “a partial departure from compartmentalized, exclusive and exceptionalist policies and politics which, however, preserves some exceptionalist features and has not led to a complete transformation to market-oriented and performance-based policies.”

Applying such a perspective, Alons (2017) concludes that the lack of genuine EPI in the CAP explains the continued existence of an exceptionalist legacy. Post-exceptionalism has allowed limited room for coordination, cooperation, and collaboration between environmental and agricultural policy domains, as policymaking is still dominated by agricultural institutions. There is a risk that the exceptionalist legacy will impede the introduction of innovative and environmentally effective policy instruments under the new eco-schemes, at least in some EU member states. Concerns over farm incomes, which are paramount under exceptionalism, may overshadow green-transition concerns when governments design the eco-schemes. In such a situation, eco-schemes may be watered down to an extent where all farmers can easily comply with them, with the result that eco-scheme payments will essentially serve as justification for farm-income support. The jury is still out. An important precondition for policymakers, if they are to think beyond concerns over farm income and design eco-schemes that result in effective EPI, is the availability of innovative models for agri-environmental instruments.

## **POLICY INSTRUMENT MIXES FOR ATTAINING INTEGRATION**

Policy instruments allow collective action to be taken in response to a public problem, and research has generated a rich literature on the types of policy instruments as well as the process

of instrument choice (Capano & Howlett, 2020; Eliadis et al., 2005; Hood, 1983; Hood & Margetts, 2007; Howlett, 2000, 2017; Kassim & Le Galès, 2010; Peters, 2000; Peters, 2005; Ring & Barton, 2015; Salamon, 2002; Schneider & Ingram, 1990).

One of the best-known taxonomies of policy instruments is the one put forth by Hood and Margetts (2007). In this classification, policy instruments are grouped according to whether they rely on the use of nodality (or information), authority, treasure, or organizational resources (NATO). Drawing on this classification, Howlett (2000, 413) advanced the study of policy instruments by introducing the distinction between substantive and procedural instruments. The latter “indirectly affect outcomes through the manipulation of policy processes,” whereas substantive tools “can alter or affect the actions and behavior of citizens toward government goals” (Capano & Howlett, 2020, 9). Examples of substantive tools include subsidies, regulations, labeling, administration, and taxes (Capano & Howlett, 2020; Howlett, 2000, 2017; Howlett et al., 2010; Howlett & Ramesh, 2014). Procedural tools “affect production, consumption, and distribution processes only indirectly” (Howlett et al., 2010, 14). They initiate the processes necessary for coordinating the activities and interactions between policy actors, for instance, certifying or sanctioning certain types of behaviors or changing interaction procedures (Capano & Howlett, 2020; Howlett, 2000, 2017; Howlett et al., 2010; Howlett & Ramesh, 2014). Examples of procedural tools include education and training, research funding, task forces, interaction guidelines, and co-production (Jordan & Lenschow, 2010; Turnpenny et al., 2009).

Recently, scholars of sustainability transition and environmental governance have acknowledged that policy mixes are needed in order to address complex policy problems (Howlett & Rayner, 2007; Kern et al., 2019; Rogge et al., 2017; Schmidt & Sewerin, 2019; Sewerin, 2020; Tosun & Koch, 2021). Over the last two decades, public policy scholars have taken an interest in policy mixes, that is, portfolios of different policy instruments (Gunningham & Sinclair, 1999; Howlett & Del Rio, 2015) that have a common goal (Kern et al., 2019) and whose instruments are complementary (Howlett & Rayner, 2007).

Thus far, scholarship on policy integration has paid little attention to policy mixes, which is surprising given that certain policy instruments align better with certain sectors and that sectoral policy actors do not only hold preferences toward the substance of a policy but also toward the corresponding policy instruments. For example, environmental policy is predominantly characterized by substantive regulatory instruments (e.g., maximum permissible levels of water pollution), whereas agriculture policy is mostly characterized by subsidies, another type of a substantive instrument. When formulating a policy that strives to integrate agricultural goals with environmental goals, policymakers must consider whether to use multiple, differing policy instruments since the policy addressees may find it difficult to comply with policy instruments with which they are unfamiliar. The policy addressees may then either lack the capacity or the willingness to change their actions and behavior as the integrative policy intends, not because of the goal of the policy concerned but because of the instruments used for attaining it. From this perspective, it appears reasonable that policy integration should use policy instrument mixes in order to attain cross-sectoral goals.

## **INNOVATIVE AGRI-ENVIRONMENTAL POLICY INSTRUMENT MIXES**

The future CAP is intended to play a major role in managing the transition toward a sustainable food system and thus meeting the F2F and Green Deal targets (Purnhagen et al., 2021;

Schebesta & Candel, 2020). Under the new CAP strategic plans, the EU member states will need to develop innovative policy instruments to meet the objectives set out in the F2F.

As the EPI achievements, particularly under Pillar I, have been disappointing so far, the EU must reconsider strategies for policy instrument mixes. In particular, it should seek inspiration from innovative ecosystem service schemes that EU member states have designed and adopted as national schemes or under Pillar II of the CAP (Bazzan et al., 2021). These can serve as inspiration for Pillar I eco-schemes addressing the environmental dimensions of the F2F. The new eco-schemes are especially aimed at enhancing sustainable practices, such as precision agriculture, organic farming, agro-forestry, and carbon farming.

Schemes for ecosystem services, as we focus on here, include payments for farmers in return for carrying out agri-environmental commitments that go beyond legal requirements or the application of standard, good farming practices that meet the cross-compliance and greening requirements under the current Pillar I of the CAP (conditionality under the post-2022 CAP).

We contend that instrument mixes that combine substantive and procedural tools have a greater potential for attaining policy integration across the sectors related to agriculture and environment than those that just combine substantive tools. Agri-environmental instrument mixes are usually designed at the national, regional, or local level and are subject to EU guidelines, meaning they can be adapted to the local farming systems and environmental conditions, which vary greatly across the EU (European Commission, 2005). The new eco-schemes will be implemented under the national Strategic Plan, and each member state will address the F2F targets, the Green Deal targets, and the Biodiversity Strategy targets for 2030.

Previous literature on agri-environmental instruments mostly focused on individual instruments, aiming to recommend the optimal instrument for a certain setting. In reality, several instruments can be combined to form policy mixes (Ring & Schröter-Schlaack, 2011).

Often the policy mix adopted is the outcome of an ad hoc evolutionary process in which instruments are added to the existing mix, rather than the result of a rational design process in which instruments are combined to achieve the optimal mix for attaining a certain policy goal (Howlett & Rayner, 2007). This perspective is plausible for several reasons. First of all, the outputs of policymaking always depend on politics, and it is possible that a given policy mix is the best outcome that can be attained considering the interests of the various actors participating in the process. Second, it is conceivable that when a policy was first adopted, it sufficed to rely on one instrument. However, as time goes by, the problem could become more complex, requiring an expansion of the instrument set. Third, the production of policy mixes through “layering” can also be catalyzed by international processes such as globalization or Europeanization. Thus, there is good reason to presume that policy mixes are the outcome of an evolutionary process rather than of a deliberate decision made at a particular point in time. Nevertheless, this does not preclude that policy mixes are never the result of purposeful policy design—this is actually feasible and, as we will show, can be observed empirically.

An agri-environmental policy mix is “a combination of policy instruments, which has evolved to influence the quantity and quality of nature conservation and ecosystem service provision in public and private sectors” (Ring & Schröter-Schlaack, 2011, 15). The general literature on policy instruments has proposed different classifications of instruments, with the most common being the NATO instrument classification, which distinguishes between nodality, authority, treasure, and organization instruments, as well as between substantive and procedural instruments (Capano & Howlett, 2020; Howlett, 2000). Applying this classification, an agri-environmental instrument mix can combine payments for ecosystem services (a substantive treasure tool) with research funding (a procedural treasure tool), training and advice for farmers

**TABLE 1** An agri-environmental instrument mix

	<b>Nodality</b>	<b>Authority</b>	<b>Treasure</b>	<b>Organization</b>
Substantive	Information provision	Farming practices	Action-based payment for ecosystem service (PES)	Administrative assistance
Procedural	Advice and training	Advisory group creation	Result-based PES	Co-production

(a procedural nodality tool), administrative assistance (a substantive organization tool), and advisory group creation (a procedural authority tool) (see Table 1). In order to put the F2F into practice, policymakers need to adopt a range of instruments. While we focus on the agri-environmental dimension only, the instrument mixes shown in Table 1 are sufficiently generic to be applied to any situation of cross-sectoral policy integration.

Against this backdrop, we distinguish between different types of agri-environmental policy mixes and highlight those that hold the greatest potential for attaining cross-sectoral policy integration within the schemes for ecosystem services under Pillars I and II of the CAP. In arguing that policy instruments for nature conservation and the sustainable provision of ecosystem services have the potential to attain integration, we establish a link between the logics of coordination, cooperation, and collaboration and the least/most innovative policy mixes.

AES are payments for ecosystem services whereby farmers voluntarily agree, by means of a contract or other stipulation, to change their farming practices in a way that should benefit the environment. There is considerable variety in how these schemes are designed: action-based and result-based, initiated top-down or bottom-up, and individual and collective arrangements. Action-based schemes offer farmers a uniform payment within a region or area for adopting specific environmental management practices. Result-based schemes offer farmers a payment that is conditional on goal achievement—for instance, a quantified environmental objective. They leave the decision of how to realize this goal to the farmers. The EU result-based schemes are currently at the pilot stage, having been launched by the European Commission and the Parliament over the course of 2014 and 2015. The aim of this joint initiative is to demonstrate the potential of such schemes for the enhancement of farmland biodiversity and to foster a discussion on how member states could implement result-based payment schemes in the post-2020 strategic plans of the CAP.<sup>1</sup>

A growing body of literature, however, indicates that result-based schemes are mostly unsuccessful and that their implementation requires more evidence-based policymaking and greater consideration of governance arrangements (Bartkowski et al., 2021; Pe'er et al., 2020). While the EU's AES have slightly improved the state of European agroecosystems (Batáry et al., 2015), action-based schemes often lack sufficient sensitivity to local farming and contextual conditions, thus failing to provide the expected environmental benefits (Bartkowski et al., 2021; Burton & Schwarz, 2013).

A considerable body of literature has focused on the strengths and weaknesses of action-based and result-based AES (Bartkowski et al., 2021; Burton & Schwarz, 2013; Engel, 2016) and demonstrated that result-based schemes are more innovative. First, they provide incentives for farmers to enroll their most environmentally suitable land, increasing the likelihood of goal achievement and preventing adverse selection. Second, they have low information requirements for regulators. Third, they are cost-effective and efficient since they incentivize innovation and lower the costs of goal achievement. Finally, they are less prescriptive, increasing farmer

engagement and encouraging the participant farmers to internalize the scheme's target (Bartkowski et al., 2021; Burton & Schwarz, 2013). However, result-based AES have higher maintenance costs than action-based ones, as they require the continuous monitoring and measurement of results. Moreover, they may be less attractive to farmers due to the uncertainty of payment. Nevertheless, they are widely considered the way forward in the EU context (Cullen et al., 2018).

More recently, the literature on AES has explored the “paradigmatic” change from individual to collective schemes and called for innovation in the delivery of agri-environmental policy measures (Arnott et al., 2019; Groeneveld et al., 2019). Hence, there is an increasing scholarly interest in the governance arrangements established to support the implementation of AES. Scholars have questioned the effectiveness of a top-down approach to AES, arguing that more responsibility should be devolved to regional levels (de Krom, 2017). It is widely acknowledged that farmer participation is important in the designing of the AES, as it increases the legitimacy of the schemes. Therefore, scholars advocate for the design of instrument mixes that facilitate stakeholder engagement and collaboration among participants (Hardy et al., 2020). There is good reason to expect that the collective approach will result in a more effective and efficient achievement of nature conservation objectives, with lower implementation costs for the farmer, and in a higher level of farmer participation.

In light of this, we outline a typology that combines these design features of AES—action-based or results-based, individual or collective—with the instrument types in the policy mix (see Table 2).

*Individual action-based schemes* are the least innovative, combining nodality, authority, treasure, and organization substantive tools. They have a low potential for attaining integration: The instrument mix includes information provision to farmer participants, farming practices, action-based payments, and administrative assistance. *Collective action-based schemes* can be considered innovative in the sense that they delegate responsibility to a collective rather than individuals. The instrument mix in such schemes includes nodality and organization procedural tools—such as advice and training and co-production—and authority and treasure substantive tools. They are dominated by a cooperation logic and are likely to result in congruent goals. *Individual result-based schemes* can also be considered innovative as they shift the rewards for individual farmers toward performance. They are dominated by a coordination logic, which can produce coherent mixes, as the goals do not contradict each other. In such schemes, the policy mix combines nodality, authority, and treasure procedural tools—such as advice and training, advisory group creation, and result-based payments—with organization substantive tools, such as administrative assistance. *Collective result-based schemes* are the most innovative as they

**TABLE 2** A typology of innovative agri-environmental instrument mixes

	<b>Individual</b>	<b>Collective</b>
Action-based	<ul style="list-style-type: none"> <li>Substantive instruments: NATO (least innovative)</li> </ul>	<ul style="list-style-type: none"> <li>Procedural instruments: nodality and organization</li> <li>Substantive instruments: authority and treasure (cooperative integration logic)</li> </ul>
Result-based	<ul style="list-style-type: none"> <li>Procedural instruments: nodality, authority, and treasure instruments</li> <li>Substantive instruments: organization (coordinative integration logic)</li> </ul>	<ul style="list-style-type: none"> <li>Procedural instruments: NATO (most innovative—collaborative integration logic)</li> </ul>

delegate responsibility to collectives of farmers, reward performance, and have the highest potential for attaining integration. Such schemes are dominated by a collaborative logic, which can result in consistent policy mixes. They combine nodality, authority, treasure, and organization procedural tools: The policy mix includes advice and training, advisory group creation, results-based payments, and co-production.

## **AN ILLUSTRATIVE EXAMPLE: ENHANCING BIODIVERSITY IN NORTHERN GERMANY**

The collaborative grassland bird protection scheme pays grassland farmers in the Eider-Treene-Sorge lowlands, located in the State of Schleswig-Holstein in northern Germany, for the protection of grassland bird clutches in fields when mowing, grazing, or managing the grassland. The scheme was initiated in the late 2000s as a grassroots initiative of local farmers and conservation activists through co-production, which is a procedural organization instrument (Helmecke & Hötter, 2011). It was initially funded by donations, but after a few years of operation, the State of Schleswig-Holstein took over the funding.

The scheme is individual and result-based. Farmers participating in the scheme must avoid carrying out actions that would affect birds during the breeding season. The payment provided by the scheme is result-based and individual farmers can benefit from it, thus representing a procedural treasure instrument. The payment varies according to the number of bird clutches per hectare and the degree to which the bird breeding in the field causes delays to farming operations. The scheme is managed by a local, private, nature conservation organization, *Kulturlandschaft nachhaltig organisieren* (KUNO), which intermediates between farmers and the regional government. The intermediation takes place through an advisory group, which represents a procedural authority instrument.

The scheme is relatively simple in its operation, with management requirements agreed verbally between the farmer and the scheme contact person for that area at the beginning of the bird-breeding season. Farmers must notify their local conservation volunteer before making any onsite modifications, and they receive advice and training (i.e., procedural nodality instruments). Conservation volunteers, who must regularly visit the plots, carry out monitoring and control. Each volunteer is designated as a contact person for a local area, in which they generally already have good contacts and which they monitor on at least a weekly basis (i.e., a procedural nodality instrument). When they record the presence of breeding birds, they approach the farmer, and if the farmer is willing to participate at that time, they mark the bird nest area and negotiate the payment and management requirements. Alternatively, the farmer may contact the volunteer to report breeding birds on their land. The Michael-Otto Institute of the German Nature and Biodiversity Conservation Union (NABU) carries out scientific evaluations of the scheme. NABU and KUNO record annual data on the number of nest sites, clutches, species, and management changes carried out by farmers (procedural organization instrument). They then submit annual reports to the State Ministry of Energy, Agriculture, the Environment, Nature and Digitalization, which is funding the payments (procedural authority instrument) (Cimiotti et al., 2017).

The resulting agri-environmental instrument mix is very innovative due to its simple, flexible administration, which permits farmers to commit their plots for one breeding season at a time, the direct engagement with the conservation volunteers in the area, who provide training and advice, and the collective-collaborative organization approach. The scheme facilitates

collaboration between the various stakeholders by design and has produced a consistent set of instruments of different types. This consistency is likely to result in an effective policy design and efficient policies since it facilitates a smoother implementation process. The collaborative nature of the scheme is an outcome of how it was launched, having been codesigned by local farmers and nature conservation organizations.

## CONCLUSION

In this article, we have attempted to connect the F2F Strategy to the academic literature on cross-sectoral policy integration. This literature is mostly limited to the question of how cross-sectoral policy integration can be attained, and surprisingly it has paid minimal attention to the question of what integration means for the corresponding policy instruments and their combination. We have proposed a typology that classifies agri-environmental instruments along two dimensions: (i) action-based vs. result-based and (ii) individual vs. collective. We suggest that, among these, procedural instruments that are collaborative and result-based are the most innovative and likely to produce a consistent instrument mix, as they adhere to a collaborative integration logic. A case study of biodiversity protection in Germany showed that this innovative type of instrument mix exists in the real world and facilitates a smooth implementation of the corresponding policy mix. While the literature on policy instrument mixes tends to stress their “accumulative” character, the case study alluded to a favorable constellation for the design of such policy instrument mixes. The grassland bird protection scheme emerged as a bottom-up initiative and incorporated the needs and preferences of both farmers and environmental protection groups.

With our illustration, we suggest that these mixes aiming to reverse the loss of biodiversity have the potential to travel across the other scopes of the F2F Strategy, particularly in relation to organic food production, sustainable seafood farming, and climate change mitigation policies. With the ultimate goal of the F2F and the transition toward a sustainable food system in mind, procedural-collective instrument mixes can facilitate collaboration and stakeholder engagement through advisory services, data and knowledge sharing, and skills.

To deliver on the ambitions of the F2F Strategy, both policymakers and academics should pay more attention to policy instrument mixes and how these relate to the attainment of cross-sectoral policy integration.

In this article, we have proposed a way to conceptualize this relationship; however, the next step for this research agenda is to test our argument by studying additional cases. Further to this, we are aware that a comprehensive analysis of the F2F Strategy cannot be limited to the decisions made by policymakers but must also pay attention to the various participants of supply chains and, in particular, business actors. Consequently, a promising perspective for future research is to better connect policy instruments with the behavior of supply chain actors. Another avenue is to apply the research perspective we put forward to the integration of other sectoral policies that are of relevance to delivering the F2F Strategy.

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## ENDNOTE

<sup>1</sup> On June 1, 2018, the European Commission presented legislative proposals on the CAP for the period 2021–2027. In June 2021, the European Parliament, the Council of the EU, and the Commission reached an agreement on the new CAP after extensive negotiations. The new CAP will take effect on January 1, 2023. In order to allow for continued payments to farmers and other CAP beneficiaries, it introduced a transitional regulation for the years 2021 and 2022.

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