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Review

The Potential of SEA in Fostering European Agriculture Policy and Strategies—Challenges and Opportunities

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Abstract: Agriculture presents one of the central global pressures on biodiversity and climate. In the EU, the Green Deal, the Farm to Fork, and the Biodiversity Strategy 2030 set ambitious environmental targets, acknowledging the key role of agriculture for their achievement. It is, therefore, crucial to integrate such targets in the European Commission's Common Agricultural Policy (CAP). The CAP 2023–2027 will be implemented through the national CAP Strategic Plans, subject to Strategic Environmental Assessment (SEA). This presents an unprecedented opportunity to steer agriculture towards sustainability. This paper aims to elaborate the role of SEA in CAP Strategic Plans by identifying the links between the strategies mentioned above and SEA, learnings from previous SEA experience in Rural development programs, and collecting experts and stakeholders' views on the topic. We maintain that SEA of CAP Plans should adopt a strategic approach rather than an impact-based one. Relying on the Critical Decision Factors, we exemplify how this approach can be applied to the key objective of reducing mineral fertilizers and chemical pesticides. We show how SEA could be pivotal in this regard and identify three enabling Critical Decision Factors: knowledge transfer, governance, and the need to bring industries into the forum.

Keywords: common agricultural policy; strategic environmental assessment; cap strategic plans; green deal; farm to fork strategy; critical decision factors

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1. Introduction

Agriculture is one of the primary sources of pressure on the global ecosystem and a major driver of biodiversity loss [1]. It is also responsible for 10–12% of greenhouse gas emissions worldwide, the figure rising to 25% when land clearing and indirect emissions from the manufacturing of chemical compounds are included [1]. The industrial production of mineral Nitrogen fertilizers through the Haber–Bosch process alone consumes 1–2% of global energy production and 4–5% of methane extracted worldwide [2].

In the European Union (EU), utilized agricultural area covers approximately 38% of the land. As of 2019, the agricultural sector directly employed some 9.5 million people, and the gross value added was around EUR 177 billion. Aided by the financial support of the Common Agricultural Policy (CAP), European agriculture has reached very high productivity. However, environmental costs have also been high, leading to the increasing number of environmental objectives being incorporated in the CAP. The launch of the EU Green Deal in December 2019 [3] represents a turning point for the EU environmental policy. The Farm to Fork Strategy (F2F) [4] and the Biodiversity Strategy 2030 (BDS2030) [5], both published in May 2020, are two primary components of the Greed Deal, each acknowledging the key role of the agricultural sector in achieving Green Deal's objectives.

The CAP is the largest EU policy in terms of budget and a significant driver affecting agriculture management. It is, therefore, crucial that the Green Deal's targets are incorporated in the next CAP if they are to meet their goals. For the first time in the upcoming CAP 2023–2027, the entire budget assigned to the Member States will be administered through formal documents called CAP Strategic Plans (CAP SP). As formal plans adopted by a public authority, they will be subject to Strategic Environmental Assessment (SEA) pursuant to Directive 2001/42/EC. We maintain that this represents a significant challenge and an unprecedented opportunity to include sound environmental objectives into the CAP.

The main objective of this paper is to discuss the role that SEA can play in the context of CAP SP to trigger transformational changes in policy formulation and implementation, specifically with regard to the incorporation of Green Deal's targets in CAP SP. Our analysis is guided by the following research questions: If SEA is legally required and needs to be conducted in order to approve CAP SP, how can the process be carried out in ways that effectively add value to the entire programme?; What can make SEA a driving force in dealing with the emerging challenges and opportunities for agriculture and rural development in Europe? What are the main critical factors that SEA must address when pursuing incorporating the Green Deal's environmental objectives into the CAP SP?

We argue that combining the new CAP architecture and the new EU policy framework creates opportunities to constructively link SEA with agricultural policy to deliver integrated sustainability outcomes. We also advocate that a meaningful environmental assessment of CAP Strategic Plans requires the adoption of a strategic approach in SEA, rather than a purely impact or effects-based one. We build our argument by drawing on past experience of SEA application to the EU Rural Development Programs (RDP) and collecting insights and experiences from practitioners, scholars, and other actors involved in the design and evaluation of the CAP. To illustrate how SEA can strategically engage with the incorporation of sound environmental objectives in CAP SP, we identify main critical decision factors (CDF) in relation to a key environmental objective of the Green Deal that CAP SP will have to contribute to and simulate how strategic thinking in SEA can be applied to this end.

In Section 2 we describe the methods. In Section 3, we describe the policy mix in which the SEA of CAP SP will take place by first presenting the more relevant agriculture-related objectives put forward by the Green Deal, the F2F, and the BDS2030 (Section 3.1). In Section 3.2, we summarise the architecture of the CAP, highlighting the main elements of the current programming period and then describe the main novelty envisaged for the CAP 2023–2027. In Section 4, we reflect on the role of SEA in the CAP SP, by examining the potential link between the F2F and BDS2030 and SEA to show the topical aspects in which SEA could contribute to achieving objectives and implement actions (Section 4.1). Subsequently, we review the literature on applying SEA to RDPs (Section 4.2), share the views of experts and stakeholders (Section 4.3), take stock of the lessons learned from the past and open up to expectations for the future. Section 5.1 explores SEA as a driver of transformational change, and Section 5.2 discusses how can SEA address challenges and opportunities for agriculture and rural development in Europe. We conclude our analysis in Section 6.

2. Method

The paper was developed through a literature review, a policy review, and engagement and analysis of expert opinion. The literature review was carried out through a thorough search of the Scopus database with the following search string: TITLE-ABS-KEY ("Strategic Environmental Assessment") AND TITLE-ABS-KEY ("agricult*"OR"*rural development"). The research returned 78 papers (updated 14/01/2022). We read all the abstracts of the returned papers and excluded those not related to Europe (as we were interested in the application of SEA in the frame of the EU CAP) and those not explicitly addressing agricultural/rural development plans and policies. This led to the exclusion of 61 papers.

The remaining 17 papers were fully read, 11 of which were deemed relevant for the current paper and eventually cited.

We have also conducted a systematic review of three EU policies considered relevant for the context of analysis: The European Green Deal, EU Biodiversity Strategy 2030, and the Farm to Fork Strategy. For each policy, we have analyzed the links or implications for SEA by searching, within the document, the following keywords: strategic assessment, strategic environmental assessment, involvement of public and stakeholders, and identification of risks and opportunities in each policy.

The third method was based on the engagement of expert opinion. The option to use this method resulted from the limited available scientific literature. We, therefore, decided to reach the views of experts involved in the evaluation of CAP SP, drawing from two primary sources. The first is the thematic workshops involving the working group devoted to an evaluation in the Evaluation Helpdesk of the European Network for Rural Development. The second source is the outcome of a specific session held during the Conference on SEA and Strategic Planning, organized by the Tallinn Forum, held in September 2020. The session included five presentations reflecting the perspective of different groups of stakeholders: practitioners, policy-makers, researchers, farmers, and environmental advocates. About thirty participants from different groups engaged in the discussion.

3. Setting the Policy Mix: The New EU Policy Context and the CAP

3.1. The European Green Deal, the Farm to Fork Strategy, and the Biodiversity Strategy for 2030: Environmental Objectives and Links with Agriculture

The European Green Deal [3] was published by the new European Commission in December 2019. It represents a breakthrough policy document with new and ambitious socioenvironmental objectives, covering clean energy supply, industry, production and consumption, large-scale infrastructure, transport, food and agriculture, construction, taxation, and social benefits. The F2F and BDS2030, already put forward in the Green Deal, were published in May 2020 [4,5].

The F2F sets an action plan to accelerate and facilitate the transition towards a sustainable food system encompassing production, distribution, and consumption. Notably, it sets quantitative targets for 2030 concerning some key environmental aspects of agriculture:

- To reduce the overall use and risk of chemical pesticides by 50% and the use of more hazardous pesticides by 50%.
- To reduce nutrient losses by at least 50% while ensuring no deterioration in soil fertility. Achieving this is also estimated to reduce the use of fertilizers by at least 20%.
- To reach 25% of the cropped area under organic farming.

The BDS2030 aims to reverse biodiversity loss in Europe and put it on a recovery path by 2030. It puts forward several actions, including enhancing the network of protected areas, restoring degraded ecosystems, enabling transformative changes through improved governance, and fully implementing and enforcing the EU environmental legislation. Regarding agricultural land, the BDS2030 reiterates the objectives of the Farm to Fork and includes an additional target of bringing back at least 10% of agricultural area under high-diversity landscape features.

These two documents are communications from the European Commission and, thus, are not legally binding legislation. They set, however, clear goals that can guide the decisions of the Member States when elaborating their national CAP SP. Both explicitly state that national CAP SP will have to be evaluated, inter alia, against robust climate and environmental criteria and that the Member States set explicit national values for the targets mentioned above.

3.2. The Current and Future Common Agricultural Policy: The Green Architecture and the New Delivery Model

The CAP is the EU's largest policy in terms of expenditure, accounting for about 33% of the Union's total budget for the period 2021–2027. Started in 1962 with the aim to supply sufficient and affordable food to citizens while supporting farmers' income, it evolved through various reforms in the following decades, increasingly incorporating broader socioeconomic and environmental objectives. The policy follows a seven-year cycle of programming periods. The current cycle was initially to run from 2014 to 2020, and the Commission issued its proposal for the post 2020 CAP in 2018 [6]. However, the new CAP taking effect has been postponed to 1 January 2023. During 2021–2022, a transition regulation is in place, extending most of the current provisions. The regulations of the new CAP were published in December 2021. CAP Strategic Plans are addressed by Reg. n. 2021/2115 [7].

The CAP is articulated into two main "pillars": the first one provides direct payments to farmers under the condition they comply with a set of basic standards, namely Good Agricultural and Environmental Condition (GAECs) and legal obligations from EU environmental legislation (for example the Water Framework Directive, the Nitrate Directive, or the Habitat Directive) referred to as Statutory Management Requirements (SMR). GAEC and SMR rules constitute the so-called cross compliance, the necessary condition for farmers to receive CAP support. The second pillar funds the Rural Development Policy, and it is made of voluntary schemes farmers can apply to. These include a wide variety of actions, from support to technical improvement to so-called agri-environmental-climate measures, i.e., commitments to adopt farming practices going beyond GAEC and SMR. Examples include organic farming, the establishment and maintenance of seminatural features on farmland, or the management of extensive pasture systems. Farmers are compensated for additional costs and foregone income resulting from implementing such measures. The two pillars are not equal in terms of funding, as the first one gets the lion's share, approximately 75% of the total CAP post 2020 budget.

Another key difference concerns funding management. Until now, support under the first pillar was transferred by managing authorities to farmers according to a predetermined set of rules; no plans or programs were to be elaborated. Conversely, the Rural Development Policy had to be implemented by the Member States through the elaboration of Rural Development Programs (RDPs), i.e., detailed documents outlining the different measures farmers could apply to, the specific commitments, and the level of financial compensation. Since the 2006–2013 CAP programming period, RDPs are subject to SEA under the Directive 2001/42/EC, as part of a broader ex ante evaluation including social and economic aspects. Importantly, measures under pillar II have to be co-financed by the Member States or Regional Authorities (in countries where RDPs are managed at the regional level, as in Germany, Italy, or Spain). This has consequences on the implementation and spatial distribution of such measures because the cofinancing capacities of regions or MS are not homogeneous across the EU.

While this policy architecture has remained stable over the years, incremental changes have been adopted to address environmental issues. For the 2014–2020 period, one of the main changes was the introduction of "green direct payment", or "greening", a set of additional environmental commitments certain farmers had to comply with to access a share of the payments under the first pillar (approximately 30% of total direct payments). Greening rules included crop diversity in arable farms, maintenance of permanent grassland, and the establishment of Ecological Focus Areas (EFAs) in favor of biodiversity. Whilst the stated objectives of greening were to preserve natural resources and decrease the impact of EU agriculture on the environment, its effectiveness has been questioned. The main criticisms concern the limited scope of application, the number of exemptions, and the implementing rules for EFAs [8,9]. A report from the Environmental Court of Auditors found that greening requirements affected only 5% of the agricultural land and concluded that it is unlikely to significantly enhance the CAP's environmental and climate performance [10]. More

generally, it seems that despite the increased incorporation of environmental requirements into the CAP—both in the form of implementation of related EU legislation through GAEC and SMR and through active measures—the degradation of agricultural areas has not been reversed.

The architecture of the post 2020 CAP was outlined in the Commission proposal of 2018. The division into the two pillars was maintained, but several novelties were introduced. A core one is that Member States will have to elaborate national CAP Strategic Plans (CAP SP), setting objectives and defining specific measures for spending the entire allocated budget (Pillar I and Pillar II). Greening and cross compliance are replaced by enhanced conditions, i.e., SMR and enhanced GAECs. In pillar I, another major novelty is the introduction of eco-schemes, i.e., measures resembling current agri-environmental schemes but with generally less demanding commitments. These schemes are voluntary for individual farmers, but the Member States must secure part of their funding in the pillar I budget. Agri-Environmental and Climate measures under pillar II remain more environmentally ambitious voluntary measures. Altogether, this set of rules represents the Green Architecture of the new CAP (Figure 1). The novelties they introduce are part of the so-called New Delivery Model based on strategic planning, whereby the focus of the policy shifts from compliance to performance. The proposed interventions must be more clearly linked to sustainability objectives and measurable achievements, and greater flexibility is given to the Member States [7].

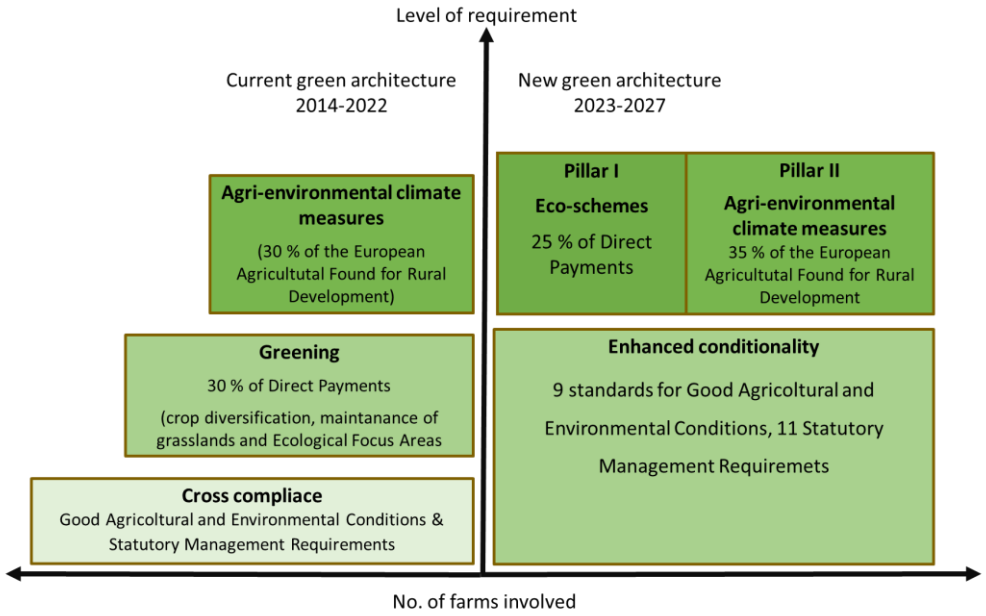

Figure 1. The new Green Architecture of the CAP. Source: own adaptation from European Commission, DG Agriculture and Rural Development.

Another important element of the CAP architecture is its performance monitoring and evaluation framework, a set of predefined indicators measuring outputs, results, and impacts of the policy. Whilst the first two measure more direct outcomes of the policy (e.g., number of hectares under some management practices or share of agricultural areas under commitments beneficial for soil health), the third measures broader impacts on environmental components to which agriculture contributes together with other drivers (e.g., GHG emissions, soil organic carbon in soil). The current Member states have to populate the values for these indicators annually as part of their legal obligations under the CAP.

The original proposal by the Commission represented the starting point of the co-legislative process with the European Parliament and the Council to reach a consensus on a new CAP Strategic Planning Regulation. After a long negotiation, a political agreement

was reached in June 2021. The key provisions in the environmental measures agreed on are [7]:

- The establishment of the 'no backsliding' principle: the Member States must demonstrate an increased ambition regarding the environmental and climate objectives in their national CAP SP, compared with their present commitments;
- In pillar I, 25% of the direct payments will be devoted to the new eco schemes.
- In pillar II, at least 35% of the budget will be allocated to measures supporting climate, environment, biodiversity, and animal welfare;
- On farms with arable land, at least 3% of the latter will be dedicated to nonproductive elements supporting biodiversity, with an incentive to reach 7% through eco schemes

Much of the debate now revolves around ensuring that the F2F and BDS2030 targets are incorporated in CAP SP. The Commission is pursuing a constructive dialogue with the Member States to ensure that their plans are aligned with and contribute to established targets. To that end, it released a staff working document in May 2020 analyzing the links between the new CAP and the Green Deal [11], followed by specific recommendations sent to each of the 27 Member States. These contain detailed analysis on agricultural trends and priorities to address at the national level and a list of nonbinding recommendations to integrate the Green Deal's target in CAP SP, which will be considered during the approval process. However, rejection of CAP SP by the Commission is possible only when the documents are noncompliant with legally binding legislation, thus excluding the above-mentioned quantitative targets and the recommendations. Although the Member States will have to define quantitative targets at the national level on some key objectives of the Green Deal, there is no legal obligation to achieve any specific target set in the Green Deal.

In summary, as Matthews noted [12], (p. 16) "The legislative framework, even if weakened in certain respects compared to the Commission draft proposal, nevertheless provides a set of tools that Member States could use to pursue the Green Deal targets. Their level of ambition will be set out in their CAP Strategic Plans". Therefore, the focus shifts now to the content of such plans. Following Matthews again, "strategic planning is a familiar part of rural development programming under CAP Pillar 2 but is now extended to all CAP expenditure" [12]. As stressed earlier, this extension of strategic planning to the whole CAP budget includes the extension of SEA. This significantly widens the scope and potential of SEA in contributing to the design, implementation, and performance of European agriculture, but such an important step seems not to have triggered extensive debate so far.

As defined in the CAP SP regulation, the SEA of CAP SP is part of a broader ex ante evaluation covering social and economic aspects. Specifically, each CAP SP shall include an Annex I with a summary of the main results of the ex-ante evaluation and the SEA, describing how they have been addressed or a justification of why they have not been considered, and a link to the complete ex ante evaluation report and SEA report. Annex III to the CAP SP will have to include the outcomes of the consultation of the partners and a brief description of how the consultation was carried out.

It appears, however, that the SEA has not gained a prominent role in the otherwise intensive discussion on how the CAP can pursue sound environmental objectives. The Green Deal and the F2F texts contain no reference at all to SEA, while the BDS2030 mentions it only once in a footnote. Given that one of the primary purposes of SEA, as stated in Directive 2001/42/EC, is to contribute to integrating environmental considerations into the preparation and adoption of plans and programmes and given that recognizing how to incorporate the Green Deal targets into CAP SP is one of the hottest points of discussion, such paucity appears somewhat surprising. Thus, in the following section, we examine the potential link between these strategies and SEA by elucidating the typical elements of the SEA process that would contribute to achieving some of the stated objectives or implementing some of the envisaged actions. Subsequently, we collect insights on the topic by looking at literature on the application of SEA to RDPs in the previous programming periods and by gathering the views of experts and stakeholders involved in CAP evaluation.

4. Results of Literature and Policy Analysis

4.1. Eliciting the Implicit Links between the F2F, the BDS2030 and Key Elements of SEA: Results from Policy Review and Analysis

We now examine the potential links between objectives or actions put forward in the F2F and BDS2030 strategies and functions of the SEA process, i.e., activities or objectives typically conducted in or pursued in SEA. This analysis will reveal opportunities that can be leveraged in these policies through SEA (Table 1). A key statement in the BDS2030 is that biodiversity considerations need to be better integrated into public and business decision making at all levels. This resonates very much with the main objectives of SEA as stated in art. 1 of the Directive "to contribute to the integration of environmental considerations into the preparation and adoption of plans and programs", so SEA appears to be a key tool that can contribute to that aim of the BDS2030. The need to effectively identify and assess the environmental impacts of proposed measures is also acknowledged by the F2F, as well as the need to assess CAP SP against clear environmental criteria—the core business of SEA.

Table 1. Links between the Farm to Fork and Biodiversity Strategies and SEA elements as provided by Directive 2001/42/EC. Source: authors' elaboration.

Extracts from F2F and BDS2030	Link to SEA Elements as Provided by Directive 2001/42/EC
BDS2030, Section 3.3.3 **Biodiversity considerations need to be better integrated** into public and business decision making at all levels. **F2F Section 2.1** [The Commission] will also strictly assess any proposal for coupled support in Strategic Plans from the perspective of the need for overall sustainability.	The objective of Directive 2001/42 is to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans/programs at different levels with a view of promoting sustainable development
BDS 2030 Section 2.2.2 The Commission will ensure that the CAP Strategic plans **are assessed against robust climate and environmental criteria.** **F2F, Section 2** [. . .] ensuring that the food chain, covering food production, transport, distribution, marketing and consumption, **has a neutral or positive environmental impact**, preserving and restoring the land, freshwater and sea-based resources [. . .]; helping to mitigate climate change [. . .]; protecting land, soil, water, air, plant and animal health and welfare; and reversing the loss of biodiversity (p. 4) **F2f, Section 2.1** The new 'eco-schemes' will offer a major stream of funding to boost sustainable practices, [. . .] MS and the EC will have to ensure that they are **appropriately resourced and implemented** in the Strategic Plans (p. 9)	SEA identifies and assesses the environmental impacts of proposed plans/programmes, including inter alia land, soil, water, biodiversity, climatic factors. It provides suggestions or define criteria for the implementation phase of assessed plans/projects.
F2F, Section 2 and Section 5 The transition to sustainable food systems requires a **collective approach** involving public authorities at all levels of governance [. . .] private-sector actors [. . .], non-governmental organisations, social partners, academics and citizens. The Commission invites all citizens and stakeholders to engage in a broad debate to formulate a sustainable food policy **BDS2030, Section 4.1** There should be an **inclusive approach with participation of all stakeholders**, including women, youth, civil society, local authorities, the private sector, academia and scientific institutions. **BDS 2030 Section 5** The implementation of these commitments [. . .] will require a sense of responsibility and strong joint efforts from the EU, its Member States, **stakeholders, and citizens**.	SEA promotes the engagement of different stakeholders, including environmental and sectoral authorities. SEA legal provisions for public consultation and participation can be extended with good practice to offer well-established windows of opportunity to create spaces of involvement for stakeholders and citizens in public debate during the CAP SP elaboration process.

Table 1. *Cont.*

Extracts from F2F and BDS2030	Link to SEA Elements as Provided by Directive 2001/42/EC
F2F, Section 2.1 Farmers should [. . .] reduce methane emissions from livestock by developing the production of renewable energy [. . .] Farm houses and barns are often perfect for placing solar panels, and such investments should be prioritised in the future CAP Strategic Plans. The Commission will take action to speed-up market adoption of these [. . .] solutions [. . .] as long as these investments are carried out in a sustainable manner and without compromising food security or biodiversity	SEA sets the frame at the plan/program level for subsequent projects with potential environmental effects and identifies potential trade-offs and environmental criteria to guide the realization of such projects.
F2F Section 2.1 [. . .] Agricultural practices that reduce the use of pesticides through the CAP will be of paramount importance, and the Strategic Plans should reflect this transition and promote access to advice [The Commission] will [. . .] promote greater use of safe alternative ways of protecting harvests from pests and diseases.	SEA is specifically tasked to identify and assess **reasonable alternatives** taking into account the aims and the geographical scope of the plan, and can therefore assess different options on how to achieve the intended objectives
F2F Section 2.1 The Commission will also make recommendations to each Member State on the nine specific objectives of the CAP, before they formally submit the draft Strategic Plans. The Commission will pay particular attention to addressing the Green Deal targets, and those stemming from this strategy and the Biodiversity Strategy for 2030. (p. 9) The excess of nutrients (especially nitrogen and phosphorus) in the environment, [. . .] is another major source of [. . .] pollution and climate impacts. [. . .] The Commission will develop with Member States an **integrated nutrient management action plan** to address nutrient pollution [. . .] (p. 7)	SEA assesses the consistency of proposed plans with high level environmental objectives contained in other plans/programs and policies. The SEA process can support MS in ensuring that proposed measures in the CAP SP explicitly contribute to GD and BS2030 targets and to align them with the work of the EIP-AGRI.
The Commission will propose legislation to convert its Farm Accountancy Data Network into the Farm Sustainability Data Network with a view **to also collect data on the Farm to Fork and Biodiversity Strategies' targets and other sustainability indicators**.	SEA is tasked with baseline data collection and establishment of indicators for monitoring, so it can both contribute to and benefit from this stated objective.

In addition, SEA promotes the interaction between stakeholders to improve decision-making processes, therefore assisting these policies in their call to involve, engage, and seek the commitment of stakeholders (GD; BDS2030; F2F). SEA can also ensure the alignment with macro policies to determine a referential for assessment drawing on policy orientations and targets established, thus assisting with the consistent use of all policy levers (GD and F2F). SEA also sets the frame for assessing future projects ensuing from the assessed plan, as those envisaged in the F2F on the production of renewable energy.

Ultimately SEA can assist in building long-term strategic research agendas (BDS2030) and governance frameworks (GD and BDS2030) or establish relevant monitoring schemes (F2F). The core outcome of this policy analysis is presented in Table 1, where extract statements from these European strategies are related to the role SEA can play. Overall, SEA appears to intersect many of the needs and activities envisaged by these two strategies.

4.2. SEA and Agricultural Policies in Europe: Results from the Literature Review

While a considerable amount of literature has elaborated methods and indicators for environmental assessment of agricultural management at individual farm level [13–17], much less is available on environmental assessment applied to agriculture at the program/planning level. Smith and McDonald [18] were among the first to argue that the sustainability assessment of agricultural systems must be woven into decision-making processes at the planning stage, but they did not address specifically the role of SEA.

Later Sheate et al. [19] and Partidário et al. [20] demonstrated the strategic role SEA and sustainability assessment could play in the compatibility of agriculture and farming policies and practices with biodiversity conservation and the instrumental importance of the engagement of key players among stakeholders.

Spaziante and Murano [21] elaborated on the role of SEA applied to CAP's pillar II Rural Development Programs 2007–2013, basing their considerations on two case studies from Italy. They examined the potential contribution of SEA with respect to the territorial dynamics at the regional level identifying three critical strategic elements in the process: (i) The selection of target values for environmental impact indicators; (ii) The consultation process, in particular, the possibility of widening it up to a variety of stakeholders due to SEA provisions; (iii) The elaboration of the monitoring system, identifying as a shortcoming the failure to introduce more specific environmental indicators.

Despite this not being legally required, the Piedmont Managing Authority decided to carry out an in-house SEA for the ongoing RDP. This case was considered a good example of how SEA could foster environmental policy integration in a report elaborated by experts for EC DG REGIO [22]. This case was thus extensively investigated by scholars. A follow-up study identified three key aspects where SEA could play a pivotal role in enabling transformative actions: (i) The setup of more specific environmental indicators (besides the set of common ones) to account for regional specificities; (ii) The need for spatially explicit analysis on the distribution of agri-environmental measures, to better target expenditures; (iii) The need for greater integration of agricultural policies and spatial planning [23].

A subsequent study [24] investigated more specifically the aspect of spatial targeting of agri-environmental measures. The analysis showed how applying simple spatial analysis techniques through GIS could deliver valuable information on aligning the objectives of such measures with the areas where they were actually implemented by farmers. Results showed a potential mismatch between areas most in need of such measures and actual uptake by farmers. While the topic had already been investigated [25–27], the study explicitly elaborated on the role of SEA, arguing that it could play a proactive role in increasing the effectiveness of agri-environmental measures if carried throughout the whole programming cycle. The main recommendations were thus to extend SEA requirements in the RDP's mid-term evaluation.

The RDP/SEA interface was examined in [28] through the lens of Ecosystem Services, showing how many of the latter can be affected by adopting agri-environmental measures. The study maintains that Ecosystem Services-based metrics could be used as easily understandable indicators to monitor the performance of RDPs. Based on their experience as SEA consultants in the processes, the authors pointed out the potential of SEA in providing a processual framework to foster organizational learning, promoting transparency and accountability in measures' design and implementation.

4.3. Reflecting on the Role of SEA for the Next CAP; Drawing on Experts' Views

Given the paucity of the academic contributions compared to other fields of application of SEA, to gain additional insights, we collected the views of experts involved in the evaluation of CAP SP, drawing from two primary sources. The first is the Evaluation Helpdesk of the European Network for Rural Development, a network of European actors to exchange information and good practices on implementing the rural development policy. A specific working group is devoted to evaluation (including SEA), and an Evaluation Helpdesk has been established as a hub to gather experiences, facilitate the exchange of information and good practices, and provide technical guidance. Since 2019, the helpdesk has published a series of "toolkits" to support the Member States and Managing Authorities and consultancies in preparing the ex ante evaluation and SEA of the forthcoming CAP SP [29]. The toolkits include a guideline to draft the Terms of References for SEA, and it provides suggestions on how to effectively integrate SEA, the ex ante evaluation, and the drafting of the CAP SP. Thematic workshops have been organized as well, where lessons and practices from the experiences of the two previous programming periods have

been discussed. The key messages ensuing from this body of work are summarized as follows [29]:

- SEA should be closely interlinked with the ex ante evaluation. Such connection should be established through ad hoc contractual arrangements and frequent interactions between the two teams (if distinct).
- SEA should provide an independent environmental assessment of the CSP.
- SEA should provide iterative feedback throughout the different phases of the CAP SP elaboration
- SEA should start as early as possible, possibly simultaneously with the Plan's design

The European Commission recommends building on SEA carried out for RDPs in 2014, highlighting that, while the latter were formally compliant, the challenge is to make sure that SEA outcomes are fully taken into account in CSP [30]. Timing is crucial too; SEA should finish before the final version of CSP is ready, or at least its main conclusions should feed into them (ibid.)

The second source is the outcome of a specific session organized at the Conference on SEA and Strategic Planning organized by the Tallin Forum, held in September 2020. The purpose of this session was to discuss the role that SEA can play in steering EU agriculture policy towards sustainability, drawing from past experience and highlighting key strategic challenges. The discussion benefited from the perspective of different stakeholders; practitioners, policy-makers, researchers, farmers, and environmental advocates. An interactive discussion took place around one central question: What are the new strategic challenges and opportunities for agriculture and rural development in Europe? Participants reflected on three different topics, the rural economy, the rural–urban connections and synergies, and healthy and sustainable EU food. Outcomes of workshop discussions revealed opportunities and challenges for rural areas on a number of aspects. Recommendations for future actions were highlighted and are here summarized in Table 2.

Table 2. Summary of stakeholders views on strategic challenges and opportunities for agriculture and rural development in Europe and the potential role of SEA. Source: author's elaboration.

Opportunities	Challenges
Moving to the rural areas was elected as an "opportunity", namely by young people	COVID stimulus to move out of the city may be only temporary Conditions to fix people must be created Minimum services are needed concerning the availability of digital connectivity and the provision of public services. The lasting effects of the pandemics can lead to an increase in state prices and second homes
COVID pandemics speeded up the movement of rediscovering rural areas, leading people to move out of the city.	
Allowing multiple land uses and functions may foster land protection and therefore contribute to agricultural and food production	The urban–rural divide in energy production vs. agriculture production and the land use; conflict may arise Overcoming the unbalance of energy in cities (green energy in cities) leaves a footprint in rural landscapes (while it is an income for rural). Threats on biophysical aspects: climate change, water quality, land abandonment, inadequate plantations (e.g., rapid growth olive trees in Portugal, quinoa in Peru)
Ecosystem services approach and mapping in SEA have a strong potential to enhance value in rural areas in different spectrums recreation, protection etc.	
SEA has the potential to deal with transboundary issues, including "telecoupled impacts."	Dependence on private transports also comes as a constraint in comparison with urban areas where people have public transport
Recommendations from the overall Conference	
• SEA must play a proactive role in the evaluation of CAP • Policies should create conditions for companies to move to rural areas. • Agriculture should become more attractive, raising awareness to recognize the quality of life and wellbeing that rural living may enable.	

As suggested in the results of the experts' views, in rural areas, the phenomena of depopulation have resulted in environmental problems such as low land maintenance and gradual degradation of the landscape. Such environmental problems also have been acknowledged in the session of the expert views recognizing SEA as an enabler of sustainability in rural areas. It could play a role in highlighting the need to enhance the conditions

to attract more people to rural areas and increasingly promote the essential social capital for its sustainable development. Considering the different insights provided so far, in the following section, we discuss how SEA can act as a driver of transformational change and strategically address the current challenges and opportunities for EU agriculture.

5. Discussion

5.1. SEA as a Driver of Transformational Change

It could be argued that the role that has been played by SEA within the RDP and CAP so far has been relatively marginal. At best, it complies with regulations, but the question is, what role has SEA specifically played, and to what end? What contributions did SEA bring to RDP and CAP deliveries? SEA applies well procedurally, usually once the planning and policy proposals are formulated, environmental reports are prepared, effects are identified, and mitigation measures advanced. However, what is the gain in conducting SEA?

Ideally, we would have conducted a thorough review of empirical cases that could have helped us respond to the above questions. That is undoubtedly a limitation of this study, as it lacked resources dedicated to reaching its goal. Nevertheless, our experience as SEA practitioners and experts for many years, coupled with the knowledge of the general practice and literature on SEA, supported the analysis we have conducted.

The limitations with the practice of SEA applied to RDP mentioned in sections above are to a large extent justified by the still dominant conventional understanding of SEA as a procedural instrument (fulfilling a sequence of formally established steps and activities), reactive to proposals, driven by the identification and assessment of impacts (as effects, consequences), and mitigation measures. The European Directive has been strongly pushing SEA to act as a project-based SEA regulatory type instrument to control environmental effects of proposed actions, in most cases to propose mitigation of effects of foreseen projects as concrete actions. With this type of effect-based practice of SEA, two main obvious limitations appear to be affecting the performance of SEA:

- A detailed scale of analysis is used, which forces plans and programmes to formulate detailed actions, such as intended projects, to reach the tangibility need for an EIA-type assessment, and consequently
- The strategic dimension of SEA is lost or misused, while plans and programmes also miss a strategic dimension.

These considerations appear particularly applicable in the case of RDP and future CAP Strategic plans, containing a large and complex set of different and intertwined measures and interventions. The specific environmental effects of such measures will depend on a wide variety of variables such as the level of uptake, the spatial distribution of beneficiaries, or the particular characteristics of the local areas in which they will be applied. Such a detailed level of information is simply not available during the plan design and the SEA process. Several environmental data that would be required to carry out this type of environmental assessment are often not available even a posteriori, as demonstrated, for example, in the recently published evaluation report on the effect of the CAP on biodiversity and landscape [31]. While the assessment of the effects of measures contained in CAP SP shall be carried out when available data and information allows it, it cannot be expected that this type of assessment can be carried out to a large extent during the ex ante phase. In general, SEA misses giving strategic direction on dealing with policy and planning problems, in particular with the critical threats to sustainable rural development. It also misses, in general, in taking advantage of opportunities at a time when these can still be integrated into policy and planning.

We argue for the need to promote SEA as a driver of transformational change and a change agent [32–34] that can bring knowledge into decision-making processes, contribute to learning and constructive processes, and not only mitigate effects. As argued before, it is urgent to challenge the persistence of traditional impact assessment routines in SEA, arguably insufficient to respond to the magnitude of environmental and social problems in the face of the rapidly changing world experiences [32]. There is recognition of the need to

address the complexity and scale of such grand problems brought to the SEA table, which, according to Noble et al., [35], are well beyond the scope of traditional project-based SEA systems.

For SEA to play a transformative role, it needs to incorporate environmental, social, and sustainability issues in decision-making processes in a positive, constructive, and creative manner. SEA needs to become consistently influential, not occasionally, and not only because of legal compliance, but to enhance routines based on sound reasoning, learning processes, knowledge brokerage [36], and better practices. There is an urgent need to shift the philosophy underlying current SEA rules and practices, to renovate or even reinvent the instrument to become more collaborative, constructive and systemic, driven by learning and creation of knowledge. This means making SEA a more engaging and persuasive sociopolitical and governance driven instrument, leverage to enable changing practices in an increasingly complex world, as advocated in [32,37]. A methodological approach (strategic thinking for sustainability (ST4S)) has been developed by Partidário [37,38] exactly to enhance the strategic role and dimension of SEA and enable SEA as a constructive, systemic, and collaborative process that adds value to decision making and acts as a driver of transformational change.

SEA is legally required, and since it needs to be carried out, why not do so in a way that can bring an added value to policy- and plan-making and bring better environment and sustainability outcomes within the development of CAP SP? More than identifying impacts and effects, SEA can explore future pathways to encourage and lead the way to more sustainable and better practices. To that end, policy and planning systems need to recognize the complexity and problems in order to enable systemic change. SEA needs to adopt collaborative, constructive, and strategic approaches, with governance strategies that reject rigid configurations and lock-ins that impede change.

5.2. How Can SEA Address the Current Challenges and Opportunities for Agriculture and Rural Development in Europe?

SEA can be used to assess intended policy and planning initiatives, but it can also help facilitate the design of strategies towards reaching sustainability objectives and targets. In this section, we develop a brief example to show how SEA could bring strategic focus to the design of CAP SP. We selected sustainable food production as a fundamental policy for CAP SP and analyzed its formulation in the Farm to Fork (F2F) strategy, considering its targets for reducing chemical pesticides and nutrient loss (see Box 1). The example applies the methodological approach ST4S.

Box 1. F2F sustainable food production core policy targets.

Reduce the overall use and risk of chemical pesticides by 50% and the use of more hazardous pesticides by 50% by 2030 . . . and . . . Reduce nutrient losses by at least 50%, while ensuring that there is no deterioration in soil fertility.

When doing SEA with ST4S, it is critical to establish the strategic focus of the SEA right at the outset. That strategic focus is expressed in the Critical Decision Factors (CDF) and associated assessment criteria. CDF are priority themes that should prevail as success factors in decision-making strategies for reaching sustainability outcomes. To identify CDF, three main ingredients are needed. The first is to understand the problems (what is wrong, what needs improvement, and what is missing). Second, the central macro policies that set policy direction and establish a referential in the assessment (named the strategic reference framework in ST4S) need to be identified. Third, equally important is to ensure multiple and diverse perspectives in the analysis and assessment, as relevant to the intended strategic development (usually through stakeholders' engagement).

As mentioned, this exercise serves only to illustrate the application of SEA, with an ST4S methodology, in the context of the design of CAP SP. Our starting question was: how can CAP SP help achieve and enhance the F2F strategy, particularly its policy on

sustainable food production and the targets concerning the reduction of chemical pesticides and nutrients loss, without reducing soil fertility and high yields? To answer this question, we set out our analysis to explore two main questions:

- How can this F2F policy unfold in the CAP SP, setting strategies to reach the policy objectives and targets?
- What would be the obstacles and enablers to adopting such strategies in the CAP SP?

To implement this policy, we explored what needs to change in current practices and looked at the problem from two central perspectives, those of the farmer and the industry. In addition, we see CAP SPs as instruments that have the capacity to direct farming policies and practices to new models of farming systems, and therefore as instruments for change towards better practices.

The analysis of the F2F strategy and the sustainable food production policy revealed several issues associated with the current farming model. Notably, we refer to problems of environmental contamination and biodiversity loss related to the use of chemical pesticides and fertilizers, in particular nitrogen and phosphorus, with many farms also being vulnerable to extreme climatic events and economic crises. From the policy perspective, the F2F strategies also engage other issues related to carbon emissions, renewable energy, animal welfare, plant health, among others. However, strategically, the focus on pesticides and fertilizers seemed to be more relevant for the engaged perspectives, and we set that boundary to our focus.

When taking the farmer's perspective, they aim to achieve a sufficient and stable income, which often translates into the need to reach higher yields. These, in the current farming model, are most often achieved with the use of pesticides to control pests and with mineral fertilizers to boost productivity, often used in excess with loss of unabsorbed nutrients and accumulation of pesticides that contaminate water, soils, and affect biodiversity. The farmers may be open to change, but only if there are alternative strategies to pest management and to the use of fertilizers that are accessible and bring them benefits. This implies unfolding F2F in CAP SP through alternative strategic options as possible pathways, needing knowledge, technology, and human effort. At a strategic level of analysis, these alternative strategic options can be grouped into the following three main labels:

- The optimization strategy, by reducing quantities of pesticides and fertilizers being used, contributes to reducing the risk without significantly changing the current farming system.
- The integrated pest management strategy, in the case of pesticides, combines a more tactical use of pesticides and inorganic fertilizers with other ecological farming practices such as natural pest control and crops diversification to increase resilience. This strategy often entails more significant changes to the existing farming system at the farm scale.
- The agroecological strategy, which mostly relies on ecological farming practices to control pests and provide nutrients, including crop–livestock integration, green manuring, compost, use of leguminosae, natural and mechanical pest/weed control etc., but also new forms of collaborative practices, comanagement at community/territorial level, above the farm scale. This strategy will probably entail a profound reorganization and redesign of the farming systems [39–41].

Farmers need to be encouraged to change and adopt different strategies, and they will only accept the change if they see benefits. Possible obstacles include resistance to change, resources availability (funding, human resources, labour), and normative rules that may need to be adapted. Overcoming such obstacles is critical but may not be enough. Farmers also need enablers that might encourage their acceptance to change, such as:

- Expertise and new knowledge increase capacities through training and experimentation.
- Technology availability and access to innovative technologies
- Learning with good practices and exchanging experiences enables them to trust the proposed change.

However, the industry is also crucial in adopting strategies for more sustainable food production. The industry of fertilizers and pesticides will probably react against any policies that will lead to their loss of profit and market reduction. They will lobby, influencing farmers and other political decision-makers to maintain current practices. Their main discourse is that reducing pesticides and fertilizers will reduce production and lower the yields. Therefore, SEA and CAP SP need also to take the perspective of the industry, recognize them as key players and make them part of the solution. The industry needs to see opportunities in new products and changing markets and needs to see a business case within the new policies set by F2F and CAP SP so that they can contribute to the alternative strategies above mentioned. They can also have an active role as key players in creating the conditions that can enable change.

All alternative strategic options to be explored, and the obstacles and enablers referred, are context specific. They depend on the level of knowledge of farmers, the level of industrialization of farming practices, the type of crops, the farms business model, etc. The CAP SP needs to play a key role in enabling policies before formulating more operational measures and actions. In addition, CAP SP can provide financial resources to help stimulate change.

As a result of applying this first phase of the ST4S in SEA to reach a strategic focus in the CAP SP, three CDF were identified as strategic to drive the assessment:

1. Knowledge—including assessment criteria as access to technology, farmers' capacity-building through training, and consumers' awareness and behavior, all supporting knowledge as a CDF;
2. Industry—as key players and part of the solution, including assessment criteria such as the creation of new markets, marketing approaches (through labelling and other), and increased transparency;
3. Governance—concerning the normative dimension, to revise and streamline rules and regulations, reduce obstacles to change, and be relevant for the engagement of stakeholders, including the industry, in advisory boards.

The development of the CAP SP using these CDF and assessment criteria as strategic lenses will not only help to recognize the F2F strategy but also to incorporate its sustainable food production policy in CAP SP, enabling the adoption of new practices and the incorporation of more sustainable measures and actions towards meeting the intended objectives and targets set by the F2F Strategy.

6. Conclusions

Improving the ecological and climatic performance of the agricultural sector is imperative to reach the sustainability goals set by the policy. Accordingly, the Green Deal and the Common Agricultural Policy have set themselves ambitious objectives concerning climate change mitigation and adaptation, the efficient management of natural resources, the reversal of biodiversity loss, and the preservation of habitats and landscapes. For the first time since its launch in 1962, the whole set of measures and actions supported by the CAP will be subject to a formal environmental assessment, which constitutes a considerable opportunity to steer policy choices towards more sustainable courses of action. We maintain that SEA has the potential to play a key role in this respect, if a genuinely strategic approach in doing SEA is adopted. In this paper, we elaborated numerous potential links between strategies and actions envisaged in the Green Deal (and its two main spillover strategies, BDS2030 and F2F) and the constitutive elements of SEA processes. We also showed how a strategic approach to SEA using the ST4S methodology could be set with respect to one of the key sustainability targets of the F2F and BDS2030.

One of the merits of SEA is that SEA working alongside policy can help find pathways to enable transitions to more sustainable practices. SEA role is to ask questions at the early stages of the policy and strategy-making process. What are core long-term policy objectives and targets? How can these be achieved, what are possible alternative pathways? What are relevant aspects to achieve, and what actions are needed? Who are the core perspectives to be recognized? Who needs to be involved through collaborative networking? Many

other questions can help us achieve better performance, environmental policy integration, enhance policy mixes and generate good practice, creating examples with interesting sustainable outcomes.

Strategic planning is at the core of CAP. It aims at enabling conditions for the valorization of rural areas. With the new CAP, more discretionary power is given to single-member states, which can have both positive and negative effects. SEA could be an instrument to counter the potential divergences with the implementation in member states. However, common guidance for integrating SEA and CAP SP is needed, establishing minimum common grounds to ensure a coherent implementation of CAP, but also of GD, BDS2030, and F2F strategies and policies.

Finally, SEA can be instrumental in helping establish directions for more sustainable practices, implement the SDG framework and leverage transformational change. It is urgent to recognize the importance of policy dialogues, engaging all actors relevant in policy and development processes. As many examples show, the number of stakeholders around the table is not limited by the size of the problem; it is only a question of being strategically selective and assuming SEA as a governance instrument. SEA should act as a broker enabling sustainable convergent action.

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