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Key policy objectives for European agricultural policies: Some reflections on policy coherence and governance issues

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Abstract. Food security and environmental sustainability are global challenges that must be addressed together to be solved. After stressing the importance of solving the challenges of producing enough food to feed a growing population while preserving the climate and the environment, this analysis discusses some issues related to the policy coherence (PC) approach that should be followed. Within-policy and between-policies coherence problems are assessed and discussed, and governance problems related to the PC approach are presented. Key points for a likely approach to PC include goal-based governance grounded in the analysis of synergies and trade-offs.

Key Words: policy coherence, agricultural policy, environmental sustainability, food security, governance.
JEL codes: Q15, Q18, Q57, Q54.

HIGHLIGHTS

- Food security and environmental sustainability should be tackled jointly
- Policy coherence is central to achieving food security and environmental challenges
- Within and between coherence policy problems are discussed
- Synergies and trade-offs should be analytically assessed and made explicit
- A goal-based governance should be deployed

1. INTRODUCTION

The European Green Deal (European Commission, 2019) has confirmed the environmental ambition, stated in 2011 (European Commission, 2011), to transform the European Union (EU) into a climate-neutral society with no net emissions of greenhouse gases (GHG) by 2050. This ambitious target makes the EU agriculture and forestry sectors pivotal in helping to reach cli-

mate neutrality as they are the only economic activities that can naturally store carbon in soil and biomasses, thus helping neutralise GHG emissions that cannot be reduced (European Commission, 2021). Along this line, the Council and the European Parliament have recently reached a provisional political agreement on strengthening the contribution of the land use, land use change, and forestry (LULUCF) sector to the EU's increased overall climate ambition.[1]

As a core part of the EU Green Deal, the 'From Farm to Fork Strategy' (F2F) was released in May 2020 to establish the required legislative framework to meet the challenges of sustainable food systems by reducing the environmental footprint of EU food, recognising that the health of people, societies, and the planet are deeply intertwined (European Commission 2020a). The strategy establishes severe environmental targets to be reached by EU agriculture by 2030, coupled with those established by the EU's biodiversity strategy aimed at putting biodiversity on a path to recovery by 2030 (European Commission 2020b).

This environmental ambition for agriculture is also found in the 2023–2027 Common Agricultural Policy (CAP) objectives (Regulation (EU) 2021/2115) as the newly established CAP should be, at least in the Commission's view, a key tool for achieving the ambitions of the F2F and biodiversity strategies.

However, the likely effects of these environmental commitments on food production and their socio-economic effects on farms and rural territories may be quite negative, raising food security (FS) concerns and highlighting the trade-off between economic and environmental objectives (Beckman et al., 2021; Barreiro-Hurle et al., 2021, 2022; Cortignani and Coderoni, 2022). FS worries, indeed, have surged to the top of (also) developed countries' policy agendas, mostly because of the compounded effects of conflicts, the COVID-19 pandemic, and climate change, which have set back years of improvement in FS globally (FAO, IFAD, UNICEF, WFP, WHO, 2021).

This study, first focuses on whether needing to choose between FS and environmental sustainability (ES) is a 'false dilemma' (Section 2) that may delay the urgent action needed to establish a coherent policy framework that could help in meeting the ambitious challenge of making agriculture and food systems more environmentally sustainable. Then, it also reflects on some issues pertaining to the complexity of establishing the policy coherence (PC) framework needed to meet this challenge. In particular, it focuses on what are defined here as '*within-policy coherence*' (*within PC*) problems, i.e. when public policy efforts are not directed towards the needs of the sector, and '*between-policies coherence*' *(between PC)*, i.e. when different policy objectives receive different degrees of policy support or even contradict each other. Governance problems related to this complex challenge are also presented (Section 3). Finally, issues related to PC approaches are discussed (Section 4), and concluding reflections are presented (Section 5).

2. KEY OBJECTIVES OF EUROPEAN AGRICULTURAL POLICY: A FALSE DILEMMA?

Providing FS and nutrition for a growing global population and contributing to ES while supporting livelihoods for workers along the food supply chain is globally recognized as the threefold challenge facing the agricultural and food sector (OECD, 2021a). This complex challenge also exists at the EU level, where ES issues have recently been placed firmly at the core of the policy agenda with the Green Deal strategy launch. Indeed, the EU explicitly declares to be willing to become a global leader in the fight against climate change and environmental degradation, leading by example, setting standards for sustainable global value chains, and using diplomacy, trade, and development cooperation to advance climate action.[2]

These ambitious commitments have been established through the EU legislative process that, over the years, has increasingly embedded the principles of better regulation (Listorti et al., 2020), including the stakeholders' engagement. In particular, in the context of EU agricultural and rural policies, also to address the concerns related to legitimacy, besides the co-decision mechanism, the EU has strengthened its approach to evidence-informed policy-making (EIP)[3] and civil society dialogue through a stakeholders' consultation approach and a system of impact assessment. As regards the stakeholders' engagement, the public consultation 'Modernizing and Simplifying the CAP' has highlighted that society identifies farmers as suppliers of healthy and safe products while also being responsible for protecting the environment and ensuring

[1] https://www.consilium.europa.eu/en/press/press-releases/2022/11/11/fit-for-55-provisional-agreement-sets-ambitious-carbon-removal-targets-in-the-land-use-land-use-change-and-forestry-sector/ (Accessed in November 2022).

[2] European Commission Communication on the 2019 Climate Action Summit hosted by the United Nations Secretary General in New York, doi:10.2775/171146.

[3] EIP is an idea in public policy proposing that policy decisions should be based on, or informed by, rigorously established objective evidence (Baron, 2018).

animal health and welfare (ECORYS, 2017).[4] More recently, in the public consultation on the sustainable EU food system initiative, a large majority of respondents (92%) agreed that food production must become more sustainable to meet future environmental and climate change challenges (European Commission, 2022a).

Stakeholders' involvement is also increasingly used to derive overviews of relevant policy issues (Van Ginkel et al., 2020) and to set sustainability sciences into research projects (Hagemann et al., 2020; Menozzi et al., 2017; Neßhöver et al., 2013), as it raises the quality and significance of research by contemplating more thorough information inputs (Reed, 2008). In a recent analysis of the key policy questions for European agricultural and rural policies, Coderoni et al. (2021) used expert sampling to select who could provide the best information to achieve the study objectives, such as people who advocate, supervise, or guide agricultural-policy processes in high-level institutions. The stakeholders' engagement brought up two major broadly shared indications: *i*) future agricultural and rural policies should prioritise environmental and climate objectives, and *ii*) economic and environmental performances of agricultures should be pursued (and thus analysed) jointly. Eventually, one key policy objective was commonly agreed upon, i.e. the *'Provision of enough healthy food with minimal impact on the environment and reduced reliance on subsidies, increasing efficiency, climate change adaptation, and resilience.'*[5]

Among the proposed post-2020 CAP objectives, the environmental ones were deemed by stakeholders to be the most relevant. These findings were not surprising, although they came from a very different range of stakeholders (from policymakers and researchers to local government or farmers' union representatives), because they were in line with other much wider stakeholders' consultation (ECORYS, 2017; HM Government, 2018). Surely, the influence of the policy context must be considered, as the interviews were administered between May and June 2020, thus, on the same days the F2F and Biodiversity Strategies were released, and this might have influenced replies as the attention of the agricultural and food sector was, at the time, completely catalysed by those documents.

Subsequently, the war in Ukraine has raised global attention on FS, but, indeed, this conflict has contributed to exacerbating an already troubling situation, as in recent years, decades of progress towards improving FS globally have started to be undermined for the combined effects of conflicts, climate change, the COVID-19 pandemic, and related economic shocks. The COVID-19 pandemic alone contributed to the largest single-year increase in global hunger since 2000 (FAO, IFAD, UNICEF, WFP, WHO, 2021). Concerns around FS are thus firmly back into the policy agenda, even for developed countries. In this regard, also the European Commission (EC) has elaborated several short- and medium-term replies to boost (global) FS and support farmers and consumers with escalating prices, as the conflict in Ukraine has not only reduced the supply of key commodities but also further intensified the rise in food and input prices (such as energy and fertilisers).

The EC had initially declared that in Europe, the availability of food, feed and fertilizers was not a primary concern (for the short term), although there were concerns regarding affordability due to high market prices and inflationary trends (European Commission, 2022b). The main problems foreseen were in terms of impact on input (e.g. potash) flows to international markets in the short term due to the sanctions imposed on Belarus and Russia (JRC, 2022). However, some measures were taken at the EU and national levels to contrast the short-term effects, and the persistence of the war has reinforced the need for political responses. These responses range from the protection of consumers from rising energy prices (Sgaravatti et al., 2021), to some derogation to greening obligations by allowing for the production of any crops for food and feed on fallow land that is part of Ecological Focus Areas in 2022 while maintaining the full greening payment (European Commission, 2022c). Despite the Commission's assertion that this last measure should be aimed at aiding supply chains in becoming more resilient and sustainable, in accordance with the F2F strategy (European Commission, 2022d), there is no doubt that such approaches could undermine ES objectives (Morales et al., 2022).

These types of policy responses, hence, have once again brought attention to the 'eternal' (not only) agricultural policy dilemma of whether and how it is possible to reconcile the pursuit of FS without undermining ES (Haniotis, 2021). However, this is now a 'false dilemma', and arguing about it does not accomplish anything other than delaying the active response to the great challenge that this joint global issue poses.

The 'real' question ought to be whether we believe that FS goals can today be achieved without addressing ES challenges. There is no doubt that the question might be answered in any way other than 'no' after being rephrased in this manner. In fact, there cannot

[4] These findings have also been confirmed in the UK, were the vision of the Green Brexit – 'with at its heart profoundly different agricultural policies, which put the environment first' (HM Government, 2018) found general support from stakeholders for replacing the CAP system with support to public goods.

[5] For details on the results and approach followed please refer to Coderoni et al., 2021.

be FS without higher ES. First, climate change and biodiversity loss are major (actual and future) threats to FS (and food safety) (UN, 2015; Pörtner et al., 2021; Jarraud et al. 2012; Coderoni and Pagliacci, 2023; Lamonaca et al. 2021; Leal Filho et al. 2023). Thus it is not plausible to hope to tackle FS without tackling ES. Secondly, many studies demonstrate that higher ES levels can help to reach FS[6], e.g. showing that less air pollution leads to higher crop yields (Lobell et al., 2022), but also that there can be positive synergies between higher productivity and lower GHG emissions (Valin et al., 2013; Baldoni et al., 2017; Coderoni et al., 2015). In other words, food (and energy) security concerns should reinforce efforts towards ES and not weaken them. Indeed, at least in the EU, the political agenda in the first months after the war in Ukraine seemed to be consistent with this conclusion[7], and the EC, in its observations on the draft Strategic Plans (submitted before the war started), required further review to '*exploit all opportunities to strengthen the EU's agricultural sector resilience, reduce Member States' dependence on synthetic fertilizers and scale up the production of renewable energy without undermining food production; and transform their production capacity in line with more sustainable production methods*' (European Commission, 2022d)

However, the policy objective to increase FS while reaching higher ES standards is very difficult to achieve as it raises multiple PC and related governance problems, which are discussed in the following sections.

3. POLICY COHERENCE PROBLEMS

EU policy objectives dealing with FS and ES belong to different policy areas sub-ordinate to different authorities with partially contradictory interests. Thus, the issues related to the PC and the governance of a policy aimed at reaching both FS and ES are far than trivial. To build the best policy mix across all potential policy instruments, PC should consider all relevant synergies and trade-offs across all policy objectives since it is ideal for policies to minimize misalignments at all levels. Despite the potential advantages of a coherent policy, achieving it may be highly challenging.

Sources of policy incoherence can be different. For this analysis, to identify different sources of likely policy incoherence more clearly, it is distinguished among what is defined as a *within-PC* issue, i.e. when public policy efforts are not focused on what the sector would need (in this case, to achieve FS and ES jointly), and *between PC*, i.e. when distinct FS and ES objectives have varying levels of policy support or even directly compete with one another. Then, governance problems are analysed with reference to the establishment in the sector of a policy-coherent approach.

3.1. Within policy coherence issues

As regards the issue of *within PC*, the attention is here mainly on the role of the CAP, as it is the oldest and largest budget policy influencing the EU agricultural sector since the European Community foundation, although whether CAP expenditure brings any significant farmers' response is still a subject under analysis (Esposti, 2022a). The first source of policy incoherence within the CAP is that, even if the agricultural and forestry sectors are key to reaching the GD targets, the CAP is ultimately not an environmental policy. The CAP approach remains, in fact, an exception to the EU environmental policy in some fields, as the Polluter Pays Principle (PPP), which is one of the main EU environmental legislation cornerstones, is not always applied, according to the European Court of Auditors (2021). This is the case, for example, of diffuse water pollution or GHG emissions, also because the cost recovery principle is difficult to apply to pollution originating from diffuse sources - where it is tough to identify the polluter – as is the case for agriculture. In this respect, the EC has replied to ECA's recommendations that it will conduct a study by December 2023 to assess the potential of applying the PPP to GHG emissions from agricultural activities (European Commission, 2021).

The application of the PPP, however, is not so easy to deliver in the agricultural sector, not only because it is a diffuse pollution source that makes it difficult to identify the polluter, but also because it requires a clear definition of the environmental baseline that separates the 'polluter pays' (when this baseline is not respected) from the 'provider gets', i.e. when farmers must be compensated if they aid in the preservation of the rural environment and so create public goods desired by society.[8] In the CAP policy framework, it is assumed that this environmental baseline is given by cross-compliance. However, in the actual setting, the PPP is undermined by the political justification idea that direct payments are,

[6] See, among many others: Ginebra et al. (2022); Hawkins et al. (2021); Kakraliya et al. (2021); Li et al. (2023); Nguyen et al. (2022); Wang et al. (2021).

[7] With the foreseen possibility to increase the renewable energy targets under the 'Fit for 55' package, and the recently reached provisional political agreement on strengthening the contribution of the LULUCF sector to the EU's climate ambition.

[8] As noted already by the Green Paper on perspectives for the CAP in 1985 (COM(85)333).

in part, a recognition of the costs that society requires farms to bear through cross-compliance (Matthews, 2013). Cross-compliance consists of respect for statutory management requirements (SMR)[9] and the land's good agricultural and environmental conditions (GAEC)[10]. While all farmers must respect SMR, only farmers receiving CAP support must respect EU standards on GAEC. Thus, it could be argued that the cross-compliance does not constitute the environmental baseline if farmers who do not get direct payments are not expected to adhere to all its standards (namely, the GAEC). As suggested by Matthews (2013), attention should be thus given to whether this baseline is appropriate or should be revised, considering both the effects on environmental outcomes and the competitiveness of the farms.

Although the CAP is not an environmental policy, environmental concerns within the policy have risen in their relative importance over the subsequent reforms, and indeed the CAP has also helped to achieve environmental objectives, mainly through the agro-environmental policies (AEP) it entails (among others: cross-compliance, greening requirements and agro-environmental measures). However, farmers' responses to different AEP can be highly heterogeneous, as shown by many studies in this field (see among others: Arata and Sckokai, 2016; Bartolini et al., 2021; Bertoni et al., 2020; Chabé-Ferret and Subervie, 2013). These studies have generally estimated average treatment effects without exploring individual treatment effect heterogeneity. In this respect, machine learning methods have recently proven to be helpful tools for analysing the impacts of AEP (Bertoni et al., 2021) that can also help in assessing heterogeneous treatment effects (Stetter et al., 2022). Supervised causal machine learning techniques have also been used to analyse Italian farmers' responses to distinct AEP measures implemented within the CAP's 2015–2020 reform to estimate individual (farm-level) and group treatment effects (Coderoni, Esposti and Varacca, 2021). Results show high heterogeneity in farm responses, individually and across different farm subgroups, where geographical features and production specialisation seem to play a major role. Detecting this heterogeneity becomes critical for improving policy design since it further stresses the highly advocated need for a more targeted design of the CAP (Erjavec and Erjavec, 2015; Ehlers et al., 2021). In fact, targeting specific farm features through policy could aid in reaching the stated environmental objectives more efficiently through expenditure savings (while retaining the same environmental performance) or through better environmental performances (while keeping the same level of expenditure) (Esposti, 2022b).

The need for a more targeted CAP can also refer to the spatial nature of data used for policy design and implementation. Space can interfere with the measurement of data used to plan, implement, and monitor the CAP in two main ways: one is spatial dependence, that is, the possible correlation of the measures of environmental (and economic) performances across contiguous units; the other is spatial aggregation, that is, how aggregating farm units at some geographical scale affects these measures (Baldoni et al., 2023). In fact, the literature has shown that when spatial data are used, spatial dependence cannot be excluded (Baldoni and Esposti, 2020) and that spatial aggregation (i.e. aggregating farm-level data at some geographical scale) affects the measurements (Jansen and Stoorvogel, 1998; Wade et al., 2019). In particular, working at the macro level may result in wrong evidence if the true effect to be detected is one operating at the micro scale, since some farm-level determinants disappear through spatial aggregation while other determinants emerge (Baldoni and Esposti, 2020). From a policy perspective, this means that the scale at which policies are designed and implemented becomes critical to prevent incurring the so-called ecological fallacy (i.e. the reasoning failure that arises when an inference is made about an individual based on aggregate data for a group). This problem has also emerged in Italy, where studies on the productivity–environment nexus in agriculture have shown that this nexus is space and scale-dependent: it may disappear and change the direction of the relationship passing from farm-level to aggregate data (Baldoni et al., 2023).

This evidence represents a further issue for targeting as it highlights that the level (or scale) at which policies are designed, implemented and monitored is very relevant, and a more efficient policy should be targeted to the real needs of the different territories, being grounded on the proper indicators.[11] However, more micro-level targeting, which has proven to be more effective in environmental and economic terms, comes at a cost to poli-

[9] SMR are rules on public, animal and plant health, animal welfare, and the environment.

[10] GAEC standards are designed to prevent soil erosion; maintain soil organic matter and soil structure; maintain permanent grassland; protect biodiversity and ensure the retention of landscape features; protect and manage water.

[11] However, this does not necessarily imply a higher level of subsidiarity. In fact, the level of subsidiarity should be linked to the to the nature of the environmental problem and should be higher for those environmental problems that are more local in nature, and lower for those that are trans-boundary in nature (e.g. climate change). Then, once decided the proper level of EU intervention, the scale at which the policies are applied should depend on the eventual spatial issues characterizing the measurement of the problem.

cymakers, both in terms of information requirements and administration (OECD, 2021a). For example, Konrad et al. (2014) find that a more targeted approach at the parcel level can achieve reductions in nitrogen runoff at a lower cost, thus lessening the trade-off between economic costs and environmental benefits at the farm level. However, the additional cost of targeting may outweigh the benefit, and policymakers may prefer a less targeted approach, accepting a higher risk of trade-offs (see the next section).

In this respect, digitalisation offers plenty of new instruments for sustainability monitoring (Ehlers et al., 2021) and thus can help tackle the challenge of targeting and tailoring measures (allowing, among others, accounting for results-based schemes). Indeed, abundant data are already available but not fully exploited, as in the case of data from tractors that could be used to leverage more sustainable farm management (Mattetti et al., 2022).[12]

One last source of *within*-policy incoherence is the choice of the wrong policy instrument. Many studies have shown that counterproductive effects can result from the selection of an inappropriate policy tool (OECD; 2021a). To this respect, it is interesting to look at the results of the OECD PC analysis on agricultural policies, which has further confirmed that different types of policy support for the agricultural sector have different environmental implications, with the most detrimental ones typically observed for the coupled support, while decoupled ones deliver income support with minor economic and environmental costs (OECD, 2019a).

One last aspect regarding *within-PC* analysis is worth mentioning here. In fact, it could be argued that the multifunctionality paradigm, which states that most negative (and positive) agricultural externalities are 'non-commodity outputs' biologically embedded in agricultural processes (OECD, 2001), makes synergies and trade-offs between economic and environmental aspects and among environmental aspects '*biologically embedded*' in agricultural production. In this respect, the OECD has concluded that multifunctionality only becomes a real policy issue when there is a strong link between the commodity and the non-commodity output which cannot be altered and when there is a market failure. Even then, more targeted policies (rather than relying on production-linked support) should be preferred (OECD, 2003; 2008; 2021).[13]

3.2. Between policies coherence issues

PC is complex to apply in a context in which synergies and trade-offs exist among different policies targeted at different objectives. This is likely to occur in the agricultural sector, which is asked, on the one hand, to produce more food, feed, fibre, and energy, and on the other hand, to become more environmentally sustainable and climate resilient. As an example, looking just at the EU climate policy, within the 'Fit for 55' package of July 2021, which puts forward the legislative framework to reach 55% net emissions reduction by 2030, the proposals that will have the most influence on the agri-food system are the regulations on including GHG from LULUCF, the Effort Sharing Regulation, which covers agriculture, and the EU Emission Trading System, which has an impact on the entire food supply chain because it will cover not only emissions related to energy use and fertilisers but also emissions related to fuels used in buildings and transportation. Additionally, the so-called 'carbon farming', i.e. practices to increase the store of carbon in agricultural soils and biomasses, is a key component of the legislative proposal (COM(2022) 672) of November 2022 on a Union framework for the certification of carbon removals. Also, the Committee on Environment, Public Health, and Food Safety have developed initiative procedures focused on methane emissions, and the Parliament issued a resolution in October 2021 that emphasised the significance of emissions monitoring and called for the creation of a legal framework with reduction targets. In such a complex framework, *between-PC* analysis seems to be fundamental.

Three major challenges arise in achieving *between PC*: the incurrence of high transaction costs to detect the synergies and trade-offs between policy objectives, the dependence of synergies and trade-offs on the different instruments chosen, and the need to arrive at value judgments on the different interests involved (OECD, 2021a).

As regards the first point, attaining coherence across policies can be quite expensive as transaction costs are incurred when coordinating across a wide range of policy areas and, maybe, multiple levels of governance (see Section 3.3). The absence of knowledge about all potential connections, which may necessitate significant research and consultation to discover potential interactions, further increases the transaction costs of establishing a PC. In addition, aiming for complete coherence could result in indecisiveness or even decision-making

[12] Of course, other factors, such as the complexity of the of the measurement, data property rights issues, and costs of digitalisation should be considered as they could substantially hamper the uptake of a PC approach.

[13] In fact, if the non-commodity output can be delivered disjointedly, separate incentives for the marketable and non-marketable outputs should be provided. Otherwise, when a link is found, often it is relaxed or weakened, e.g. through changes in farming practices (as mentioned previously, many synergies and trade-offs can depend on the chosen tool). Thus, separate incentives should be put in place.

paralysis; thus, it might be more practical to aim for 'good enough' coherence (Vanheukelom et al., 2018) that could be reached by addressing the most significant trade-offs and synergies.

The second obstacle to achieving PC is represented by the evidence that trade-offs and synergies between different policy domains depend highly on the policy tools used. As a result, coherence faces an extra hurdle because mapping potential relationships depends on all the instruments used, although this could also represent a positive opportunity because judicious instrument selection can reduce trade-offs and increase synergies.

One significant example provided by OECD (2021a) of the importance of the tool chosen is the need to target GHG reduction by means of demand- or supply-side tools, e.g. taxes on types of food consumed (such as meat) or GHGs emitted. According to economic theory, in a closed economy, the results in terms of reductions in quantities produced (and consumed) should be the same whether the tax is charged to producers or consumers. However, environmental results can differ. In fact, if the tax is imposed on GHG emitted, then, typically, not only the total GHG but also the emissions intensity of production will fall, as farms will start investing in the less emission-intensive production method (to avoid decreasing production levels). The same result could not be obtained with an undifferentiated tax on specific food products category as it could only decrease the product's consumption unless the program could be able to differentiate the tax depending on the levels of emissions, e.g. with a carbon label (Canavari and Coderoni, 2020); this could, however, bring higher transaction costs. Thus, even though, in theory, demand-side solutions might be utilised to address supply-side issues and vice versa, policies should ideally concentrate on directly addressing externalities as targeted measures have proven to be more effective in reducing the same level of GHG emissions with a smaller decline in production. Demand-side policy interventions are, therefore, the most effective ways to address consumer externalities, while supply-side policies should be preferred to address production-related externalities (OECD, 2021a).

Finally, the third challenge is the choice between two or more desirable – but conflicting – outcomes that may be necessary while designing a policy. This refers to both the trade-off that emerges when a policy is publicly funded, as it entails either raising taxes or cutting spending on other programs, but can also refer to conflicting policy goals that can be pursued with different types of policies (e.g. producing more food or increasing the share of grasslands to provide carbon sinks). These types of choices are based on society's priorities; thus, decisions cannot be reduced to technical issues but involve value judgments (OECD, 2021a).

Solving these complex challenges is not a realistic policy objective, whereas trying to manage them more effectively is. To that end, the OECD has proposed guidelines to provide a practical strategy to ensure PC for food and agriculture policy challenges, building on OECD recommendations on PC for sustainable development (OECD, 2019a). These guidelines propose that simplification is the first step to be made. Then for the remaining complexity, the strategy aims to systematically test and quantify potential interactions, calibrate the policy mix, and make societal and transboundary trade-offs explicit to support conscious and open decision-making (OECD, 2021a).

As regards the first step, i.e. the reduction of complexity, according to a long tradition of economic theory, in principle, policy interventions should be limited to setting the level of playing, i.e. building the framework necessary for markets and communities to operate; correcting market failures (i.e. internalizing externalities and helping to provide public goods) and ensuring fair wealth and opportunities distribution (OECD, 2021a).[14]

Even eliminating complexity, some interaction effects between policies will surely remain, and policymakers need to have the tools to identify the nature and extent of such interactions. This identification stage can be divided into two gradual steps.

The first step is the preliminary screening process, which can be facilitated by several techniques, including regulatory impact assessments (RIAs) and stakeholder consultation processes. In this stage, a broad perspective is needed to identify *spillovers* since certain interactions may have an impact on present well-being, but it is also crucial to consider potential 'future' (i.e. inter-generational) interactions or 'elsewhere' (i.e. transboundary) effects (see Section 3.3) (OECD, 2016).

In the second step, the potential interactions found should be further scrutinized analytically to detect direct and indirect interactions and quantify them whenever possible. This scrutiny may entail simulations, discussions with experts and stakeholders, and analyses of statistical and experimental evidence (see, among others, Ronzon and Sanjuan, 2020; Verghaus and Hake, 2018; Breure et al., 2022). Many interactions can

[14] Public intervention is just one side of the actions needed to meet the FS and ES challenge. Businesses can in fact play a major role by at least minimising any adverse impact of their activities. In this respect, many initiatives included in the F2F and derived from the international context can help establish a common framework to help agri-businesses and investors contribute to sustainable development (see among others the OECD-FAO Guidance for Responsible Agricultural Supply Chains; OECD/FAO, 2016).

be found, but what matters for policy is whether these interactions are significant enough to justify changing existing regulations.

In this analytical task, if small or no interactions are found, the best way to proceed is simply to target instruments to the chosen political objective.

If interactions arise between policy objectives, the first distinction to make is among synergies and trade-offs among them. When synergies occur between objectives, it should be kept in mind that 'silver bullets' rarely exist, and multiple objectives usually require multiple policy instruments. OECD (2021a) suggests, as a rule of thumb, adopting the 'Tinbergen rule' (Tinbergen, 1952), i.e. using *as many instruments as objectives*. Although one policy instrument has positive effects on different objectives, complementary policy actions are thus usually needed to achieve them fully. However, an interesting aspect to consider and eventually exploit is that the amount of effort required to implement the various targeted policies may be reduced if synergies exist between these objectives. Thus, if synergies emerge, the main issue is the 'calibration' of the best combination of policy instruments and the extent to which they must be used, considering empirical evidence on their effectiveness compared to other tools.[15] To assist policymakers in selecting the proper policy instrument and the extent to which it should be used, models that allow the quantification of synergies are crucial. An example of this type of synergy assessment is given by the studies that have estimated the impacts of the imposition of some of the F2F targets on EU agriculture (see, among others: Beckman et al., 2021; Barreiro-Hurle et al., 2021, 2022; Cortignani et al., 2022). Among these, Cortignani and Coderoni (2022) presented an analysis for Italy of the likely effects on agricultural added value and environmental externalities of adopting some environmental targets, as envisaged by the European F2F strategy and EU climate law.[16] The results show that the imposition of these targets produces evident trade-offs between economic and environmental objectives, although highly differentiated across each scenario by farm type and size, but also reveal important synergies among different aspects of performance in meeting environmental targets that should be further scrutinised to assess whether they could be exploited to obtain multiple environmental outcomes.

When trade-offs are found, instead, the first step is to identify possible alternative instruments to use. Often trade-offs (and synergies) depend on the choice of an inappropriate policy instrument, and they tend to be more severe when a single instrument is used to achieve multiple policy objectives.

For example, a common source of trade-off found in many OECD countries is the benefit provided to farmers by fuel tax concessions (which also occur in Italy), or lower VAT rates applied to pesticides and fertilisers (OECD, 2020). In this case, it would be preferable to separate the two policy objectives (income support and the ES) by targeting income support with a different tool and levying a tax on carbon emissions generated with fuel consumption (thus applying the PPP).

If trade-offs still exist after the right policy tool is identified, there is a need for mediation between competing objectives, which inevitably requires value judgments, an approach that runs counter to identification and calibration, which place major emphasis on technical analysis. By allowing participants to reflect on data and arguments as well as their personal views, democratic deliberation could be beneficial (Dryzek and List, 2003). However, if foreign parties are not represented, even such a deliberative method might not be able to resolve transboundary spillovers (see Section 3.3). To conduct such an analysis of the interactions between policy objectives, it is crucial to invest in reliable systems to acquire the best evidence to inform policymaking. However, as these decisions are never made with perfect information, it is important that the uncertainties concerning the potential synergies and trade-offs of different policy options are made explicit.

Figure 1 proposes a schematization of the main PC issues analysed.

3.3. Governance concerns

Governance issues related to PC are very complex when the policy objective, as in this case, involves different policy domains that often belong to different decision centres (e.g. different ministries, departments, agencies), different government levels (e.g. the EU, states, regions, municipal/local governments) and thus different governance structures and time horizons (e.g. medium-term policies like the CAP and long-term strategies like the Green Deal).

In Europe, policies are designed and implemented by the European Multilevel Governance (EMG) system, through which the EU, its member states, and regional

[15] For example, to reduce GHG emission it can be used a tax on consumption of some food products (e.g. red meat) or on the total GHG emitted by the farms, but only using the tax on consumption the double goal of reaching higher ES and health benefits can be reached.

[16] These targets are represented by *i)* the reduction of 20% in chemical fertilizers use; *ii)* the reduction of 50% of more hazardous pesticides; *iii)* the 50% reduction in the expenditure of antimicrobials; *iv*) the previous three targets together and *v*) the reduction of 30% of agricultural GHG emissions.

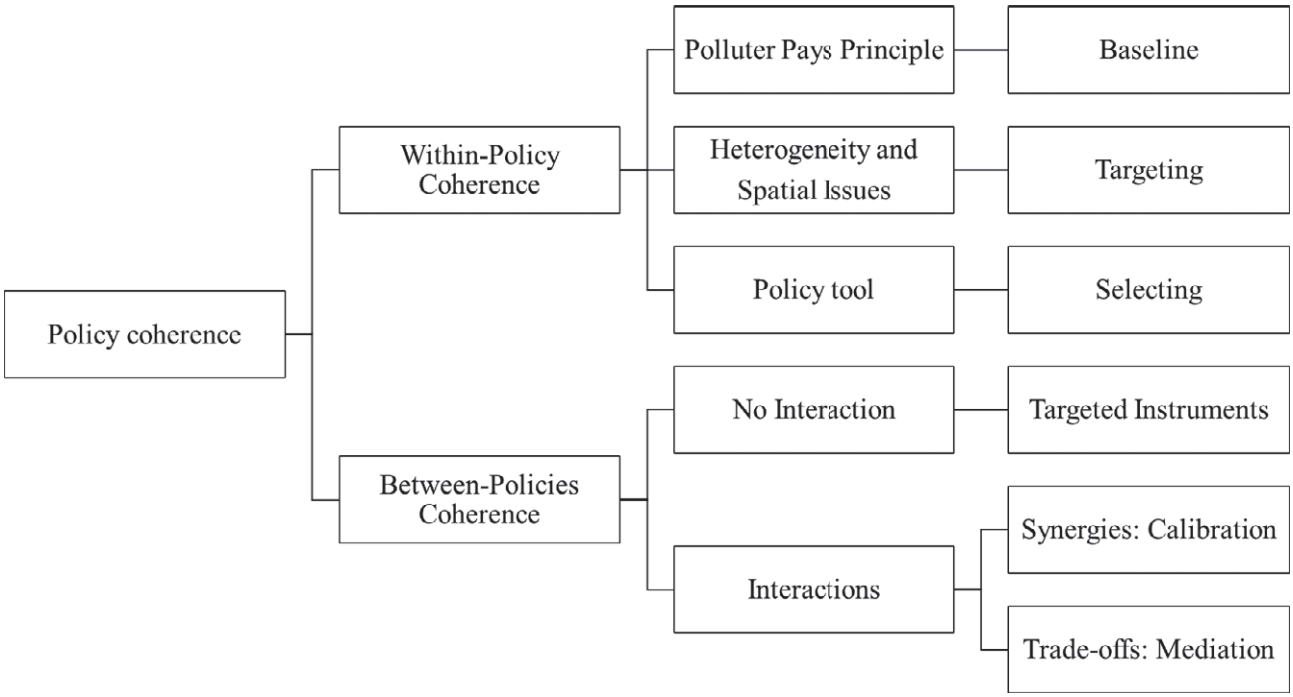

Figure 1. A schematization of the PC issues. Source: Author's elaboration on OECD, 2021a.

and local authorities cooperate at the operational and institutional levels (EU Committee of the Regions, 2013). Being part of this EMG system, decision competencies rest at different levels for the agricultural, environmental, and climate sectors (Venghaus and Hake, 2018). This distribution of decision competences and means can significantly affect policy design in the implementation of FS and ES objectives. The CAP is, in fact, primarily a distributive (of funds) policy which is also highly communitarized, while, for example, biodiversity and water policies are regulative (set rules and standards; Berkhout et al., 2015) policies and, like energy policy, are left primarily to national implementation.

In such a complex governance framework, some level of coordination would be needed between policy communities. To reach PC, this coordination could range from simple collaboration to real forms of 'policy integration' (Parsons, 2019). Starting from Parsons's definition of an integrated food policy, an integrated FS and ES policy would be represented by the joining up of goals and policies related to relative domains – '*horizontally across governments, vertically between government levels, or between inside and outside government actors – to better align these efforts, reduce incoherence between them*' (Parson, 2019: 3), and tackle related challenges more effectively.

PC and integration of the policymaking process are thus not the same concept, and a coordinated approach to policy would require both of them. If PC refers to avoiding conflicts of objectives and results within and between different policy domains, policy integration refers to some form of coordination that can range from simple collaboration on some specific themes to complete functional integration by giving only one decision centre (e.g. a ministry) all responsibilities over a policy area. Although the latter is the easiest way to help institutions align their objectives and policies, this type of policy integration is neither easy nor costless (OECD, 2019b). In fact, in some cases, complete functional integration cannot be reached (e.g. in the case of different territorial levels involved), or it can bring various degrees of risks: higher integration can conflict with principles of decentralisation or of subsidiarity[17] or can increase coordination efforts at the expenses of better programming (Candel, 2017). Thus, ideally, the degree of

[17] Although in principle more subsidiarity would seem to be desirable to achieve higher PC, as it puts forward a better targeting of goals to specific territorial needs, in practice the principle itself could be an obstacle to reach PC for two main reasons. First, environmental and climate objectives are often trans-boundary problems, therefore, national or local action alone are unlikely to lead to best possible solutions and a higher EU coordination is needed. Secondly, although the best way to achieve PC should be a complete functional integration, this is actually not feasible within the EU governance setting. Thus, to apply the subsidiarity principle and attain PC, what is needed is more coordination among the different territorial levels.

coordination between policy communities should match the intensity of synergies and trade-offs between their respective policy domains (OECD, 2021a).

Another obstacle to the governance needed to achieve PC is the transboundary *spillovers* that can characterise agricultural and environmental policies. Domestic policies in these fields can have transboundary effects on one or more countries and even global effects. To the extent that interactions are domestic, the costs and benefits of PC are also domestic. In this context, the transaction costs of achieving PC can be better justified, and choices can be made within the country's decision-making boundaries, simplifying the process of coordinating different policymaking communities and information recovery. When policies have an impact on other countries, instead, PC itself becomes a common-pool resource, with the related problems of under-provision and collective action failures (OECD, 2019a). International stakeholders can rarely advocate their interests in foreign policy-making processes, and the *benevolent social planner* 'fails to operate' at the international level. The case of the global public good given by climate stability offers the most relevant example of such an international case of PC that is tough to tackle.

International collaboration should be put forward in this instance, reconciling domestic goals with the advantages of international cooperation (von Lampe et al., 2016) as collaborative approaches can lead to meet of global challenges by realising mutual gains (OECD, 2021a).

One strategy to cope with complex governance for the PC could be represented by focusing on goals integration, via goal-based governance, by incorporating environmental goals - such as climate change mitigation and biodiversity preservation - into agricultural policies to ensure that they consider these priorities and then put forward goal-based governance. Such an approach, in contrast to 'rules-based governance', sees the engagement of a wide range of stakeholders in recognising shared problems and setting broad objectives (Kanie et al., 2019). The process allows an early consensus on goals, targets, and subsequent indicator definitions (Biermann et al., 2017). After stakeholders are involved, they establish priorities, gather resources, build the institutions needed or modify existing ones, and inspire individuals and institutions to work toward the goals (Kanie et al., 2019). This strategy, indeed, builds on insights gained from researching effective management of common-pool resources, including the necessity of defining users, developing inclusive decision-making processes, and creating rules that are adaptable to local needs (Ostrom, 1999).

At the international level, the Sustainable Development Goals and the Paris Agreement on climate change seem to have adopted this goal-based approach, with '*a shift away from international rule-making towards a system based on goal setting*' (Kanie et al., 2019: 1745), though only the second is legally binding. At the European level, such an approach seems to be put forward by the framework of the reformed 2023–2027 CAP, in which policy-specific objectives are linked to common EU goals for social, environmental, and economic sustainability in agriculture and rural areas (including the F2F ones), and the focus on the results of the policy, with a wide set of indicators to monitor its signs of progress, seem to support – at least on theoretical grounds – the idea of goal-based governance.

In fact, each member state is free to select and further design, in its Strategic Plan, the specific measures it considers the most effective in meeting its own specific needs (European Commission, 2020c).

Although this could result in a lack of harmonization and comparability between member states, as seems to have been the case for the Directive on the Sustainable Use of Pesticide (European Commission, 2017a; 2020d), in theory, the Strategic Plans should put forward a more coherent intervention logic, based on specific goals decided with a higher level of subsidiarity and shared with local stakeholders.

However, according to Lovec et al. (2020)[18], the new CAP will not probably make much of a difference in terms of overall policy effectiveness and coherence. Since the programme logic of the new CAP will be like the past RDPs, the majority of the shortcomings in the existing planning system[19] are likely to continue, and the strategic plans will only assist the Commission in more fairly allocating responsibility to member states. In fact, according to the authors, the new CAP lacks a robust *ex post* policy impact assessment framework, as most of the result indicators proposed are output or short-term outcome indicators, and this will hinder the achievement of substantial improvements in policy effectiveness and make trade-offs between objectives explicit[20] (Lovec et al. 2020).

[18] The authors propose an interesting ex-ante analysis of the New CAP Delivery Model. As strategic plans for the new period were not available at the time of the analysis, the authors used data from 2015-2020, a period with similar overall policy objectives, measures, and programming principles of the new legislative proposal, for the country analysed (Slovenia).

[19] The European Court of Auditors evaluating the CAP 2014-2020 programming period, argued that interventions target too many objectives that were too general (European Court of Auditors, 2017) and highlighted a weak linkage between the objectives and interventions (European Court of Auditors, 2018).

[20] As demonstrated also by the evaluation of the 2015-2020 RDP system (European Court of Auditors, 2017).

Additionally, policy tools largely remain unchanged, along with current issues of poor targeting which cause poor transparency (Swinnen, 2015). Thus, although the CAP 2023-2027 foresees higher shares of green spending, this does not necessarily imply that environmental objectives will be reached. Indeed, also in the past programming period, as stated by the special report by the European Court of Auditors (2022), although half of all climate spending from the 2014-2020 EU budget related to agriculture, farm emissions had not decreased because of this.

Furthermore, stakeholder involvement commitments seem to be rather weak. At best, the effectiveness of the new delivery model will rely on the goodness and administrative prowess of governance systems within each member state. However, the issue of administrative capacity will be a substantial challenge for many member states that have little experience on programming of Pillar I and also Pillar II measures (Lovec et al., 2020).

4. LIKELY POLICY COHERENCE APPROACHES

In several OECD countries, RIAs are used by policymakers to evaluate PC before developing new regulations (OECD, 2021a). In the EU, the RIA is a foundation of the policy-making process as stated by the EU 'Better regulation for better results' (COM(2015)215) and the subsequent 'Better regulation: Joining forces to make better laws' Communications (COM(2021)219). The guidelines on impact assessment call for a comparison of various policy choices based on their economic, social, and environmental implications, with quantification of impacts, whenever available. In particular, the RIA should include the description of those who will be impacted, how they will be impacted, and any potential effects on competitiveness. Also, impact analyses must include the consultation procedure adopted (European Commission, 2017b).

Indubitably, this approach to the RIA strengthens PC by using an ex ante assessment of potential trade-offs and synergies and enabling a comparison of various policy choices, considering their interaction effects. However, to tackle the ambitious joint target of reaching FS and ES, a more proactive role for policymaking should be foreseen that goes beyond the usual requirements of the RIA. In fact, when dealing with such a complex policy objective, there is no single policy cycle[21] but rather several policy cycles involved, and policy objectives may also contradict each other. Thus, they require a joint analysis, i.e. a coherence assessment.

An approach increasingly used to foster PC is to adopt a more complex multi-stakeholder consultative approach for long-term strategies or policies. An interesting example, in this case, is the 'Collaborative Framework for Food Systems Transformation', established by the One Planet Network's Sustainable Food Systems Programme, a multi-actor partnership focused on accelerating critical transformation towards sustainable food systems (UNEP/SFSP, 2019). The framework recognizes that creating PC for complex, interrelated issues requires cross-sectoral, participatory approaches (ILO, 2021) and acknowledges the importance of involving various levels of governance and analysing synergies and trade-offs between outcome goals, recognizing the importance of EIP across the whole policy cycle (Alliance of Bioversity et al., 2021).

This coherence assessment could be used to not only appraise new policies but also assess the coherence of established policies. An example, in this case, is represented by the G20 fuel subsidy peer review (OECD, 2018), in which countries conducted self-reviews of domestic fossil fuel supports and submitted these self-reviews to a review team. This process has allowed a within-country appraisal of inefficient policies and a rare coordination and dialogue on PC across countries.

Also, different levels of policy integration can be utilized to increase coherence; however, as mentioned, integration has a price and does not always guarantee better results (Candel, 2017).

An RIA can be used to assess the transboundary effects of proposed policies to avoid unnecessary costs, e.g. through the assessment of trade impacts and impacts on foreign jurisdictions. Thus, policymakers can improve global PC with proper policy processes in their domestic regulatory practice, even without explicit coordination, but just with the consultation of external stakeholders or compulsory notification of draft regulations to international fora (OECD, 2021a), like in the case of the World Trade Organization Technical Barriers to Trade and Sanitary and Phytosanitary measures Agreements with the single central government authority responsible for notifications (OECD, 2021b).

Aligning global targets to local contexts should be the norm but can, of course, create challenges in implementation. Goal-based governance could help reach such ambitious policy objectives as long as it implies cross-

[21] From its origins in the 1950s, the field of policy analysis has considered the policy process as evolving through a sequence of discrete stages, defined as the policy cycle. Over the years, several different changes in the stages' typologies have been developed; today, the distinction between agenda-setting, policy formulation, decision-making, implementation, and evaluation is quite commonly accepted (Jann and Wegrich, 2007).

silos interaction, encourages participatory and deliberative methods and adopts 'backcasting' approaches. This basically implies setting time-bound concrete quantified goals and targets, designing a viable pathway to achieve them, 'backcasting' from the future desired state to the current situation, and measuring progress, gradually adjusting the ambition of targets over time (Kanie et al., 2019; Sachs, 2015). These pathways should incorporate the key measures, their costs and financing, and the organization of the implementation strategy, e.g. through public and private investments (Sachs, 2015), aligning all actors from private to public, with inclusive and adaptive decision-making. In this context, better tools for multi-sectoral scenario planning and modelling could help mapping pathways to achieve multiple goals simultaneously (Pascual, 2022).

Setting goals based on what is needed rather than what is immediately feasible will encourage the necessary levels of creativity to attain them, and this will help exponential progress rather than (as is often assumed) linear progress (Kanie et al., 2019). However, if these goals are not shared with the stakeholders, there is a high risk of creating dissatisfaction among some of them and can also limit the application of a PC approach (Bruere et al., 2022), as happened in the case of the F2F strategy targets (Copa/Cogeca, 2021).

Recent research has highlighted the importance of reaching positive tipping points to speed up the transformation of complex systems (Fesenfeld et al., 2022; Van Ginkel et al., 2020). The socio-technical tipping literature suggests that small-scale changes in a system can move sensitive systems into a qualitatively new state due to strongly self-amplifying (net) positive feedback mechanisms (Sharpe and Lenton, 2021; Fesenfeld et al., 2022). Thus, transformative change can occur using leverage points which alter future trajectories (e.g. consumption patterns), and this can help create a climate and biodiversity-resilient development pathway (Pascual, 2022; Pörtner et al., 2021).

Currently, there is a lack of knowledge about the politics of enabling such positive tipping points (Fesenfeld et al., 2022), but hints can be derived from policy feedback literature that could help overcome barriers that impede reaching tipping points (Béland and Schlager, 2019).

5. CONCLUSIONS

FS and ES challenges are joint global problems and must be addressed jointly to be solved (or to make progress towards their solution), as there cannot be FS without ES. Even if short-term shocks can point attention to one objective, in the long term, they are indubitably interlinked. Policymakers should thus pay attention to how to reconcile short-term (often counterproductive) replies with long-term goals.

There is no doubt that implementing such a complex multi-objective policy requires a higher level of PC which, in turn, requires cross-silos, participatory approaches and a backcasting method.

PC should be pursued within policy and between policies. To analyse the *within PC*, the focus here was on the CAP as the primary policy for the EU agricultural sector. The main challenges in including environmental objectives in the CAP are related to applying the PPP, which also requires defining the appropriate baseline, dealing with the heterogeneity of replies and with spatial problems and choosing the proper policy tool. All these arguments call for better targeting and even tailoring of policies that will surely benefit from new instruments offered by digitalisation.

To reach *between PC*, instead, after simplifying the policy framework, an analytical task should be developed aimed at identifying synergies and trade-offs among policy objectives. Where synergies emerge, policymakers should be aware that there are rarely 'silver bullets' and that multiple objectives typically call for different policy instruments that should be properly calibrated using a mainly 'technical' approach. When trade-offs between competing objectives exist, often the solution is changing the adopted policy instrument. If trade-offs persist, value judgements should be made, making domestic and transboundary trade-offs explicit to support shared and open decision-making.

Policy integration is often advocated to reach PC; however, this comes with costs and is not always feasible. Implementing goal-based governance could represent a means to overcome the difficulties of policy integrations and could also help in using leverage tipping points in socio-ecological systems which alter future trajectories towards the changes needed.

Whether or not the EMG system is adequate to sustain such a PC approach remains an open question. What is certain is that the EU agricultural policy has a long history as a European policy, as it represents one of the first policies by which the EU has tested its legislative process and institutions (Sotte, 2022). If the EU agricultural policy meets the complex challenges facing it, it might represent once more the context in which future EU policymaking processes and governance settings are tested.

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