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Wildfires in the European Union: The cohesion of the European Green Deal policies to prevent them

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Index

Index of abbreviations and acronyms

BS	Biodiversity Strategy 2030
CC	Climate Change
CCAS	Climate Change Adaptation Strategy
EGD	European Green Deal
EU	European Union
EC	European Commission
FFS	Farm to Fork Strategy
FS	Forest Strategy 2030

1. Introduction

a. Root causes of the problem

Unlike the global discourse highlighting deforestation as the main concern, Europe presents a contrasting narrative, marked by an expansion of its forested areas. This divergence is established in historical sociocultural events that have shaped the trajectory of European forests. Factors such as diminishing agricultural activities, changing in livestock exploitation, rural exodus, and a reduction in timber exploitation have led to the abandonment of forests from productive endeavours, thereby maintaining low combustible material levels (Moreira et al., 2011). However, the contemporary scenario introduces a complicating factor: Climate Change and its effects.

The number of days with high-to-extreme wildfire danger is expected to increase, as well as the affected regions. In the last decade, have been observed more days with high-to-extreme fire hazards in the southern United Kingdom, Belgium, parts of the Netherlands, and Germany (Costa H., et al., 2020). This is a consequence of the change in the overall combination of precipitation, temperature, wind, and humidity patterns, all of them are forecasted consequences of Climate Change (Costa H., et al., 2020).

It is true that climate change has been manifested in recent years through periods of extreme fire danger during the fire season, but there are aggravating factors that depend on the society behaviour and policies implemented. Socioeconomic changes in land-use and demographic characteristics of the country such as reduction of the rural population has led to horizontal and vertical vegetation continuity as well as forest biomass accumulation, increasing the likelihood of starting fires and making their control more difficult. Also, the growth of poorly planned wild-land interurban areas where the probability of human-caused fire starts as well as the potential for damage increases steeply (Fernandez-Anez et al., 2021).

b. Current situation of wildfires in Europe

In European history, wildfires have primarily afflicted Southern countries such as Greece, Portugal, Italy, and Spain. The total burnt area in 2021 within these nations amounted to 391,736 hectares, nearly double that of the previous year and the highest since 2017 (Forest Fires in Europe, Middle East and North Africa, 2021). Meanwhile, other European regions are also witnessing deteriorating trends. Areas including Southern UK, Belgium, parts of the Netherlands and Germany, as well as the Pannonian Basin, nestled between the Carpathians and the Transylvanian Plateau, are experiencing an uptick in the number of days with high-to-extreme fire danger (Pronto et al., 2023).

Human activities and climate change exacerbate the wildfire situation, alongside forest management practices. Consequently, specific components of wildfire risk are projected to escalate across various European regions, amplifying the threat to both people and ecosystems in vulnerable areas (European Commission et al., 2017). This paradigm shift poses a significant challenge to many European countries, underscoring the imperative to safeguard their citizens.

Notably, forest management falls under national jurisdiction, constraining direct intervention by the European Union. Despite the widespread nature of the issue, the EU primarily advocates for member states to take charge of forest management (Pronto et al., 2023). Moreover, the EU allocates a substantial portion of the Regional Development Fund and the EU Solidarity Fund to aid in wildfire mitigation during the recovery phase (Pronto et al., 2023). However, it is crucial to underscore that the effectiveness of these efforts hinges on the coordination and coherence between EU strategies and policies guiding the allocation of these funds.

Thus, it is imperative to ascertain whether the objectives influencing Member States' domestic policies demonstrate coherence within the realm of wildfire prevention.

2. Coherence of wildfire prevention policies: the departing point to achieve a comprehensive result

The primary aim of this paper is to analyse the coherence within the policies influencing wildfire prevention in the context of the European Green Deal by selecting policies that influence the phenomenon and looking for attributes of coherence between them. Presently, the European Union is intensively engaged in mitigating wildfires, recognizing the imperative to address this escalating phenomenon (Pronto et al., 2023). While previous management strategies sufficed for county-level needs, the evolving landscape of wildfires, propelled by climate change and societal, demands a more cohesive and coordinated approach from the EU (Pronto et al., 2023).

Emergency management protocols typically encompass four stages: prevention, preparedness, response, and mitigation (Panigua, S., 2002). While the EU has historically concentrated its resources on response and mitigation, wildfires underscore the critical importance of prevention in averting loss of life and environmental devastation (Tedim, F., 2019). Unlike natural disasters such as floods or earthquakes, wildfires offer opportunities for preventive action. Once wildfires ignite, their dynamic and unpredictable nature renders response efforts complex and costly across multiple sectors. Research suggests that prioritizing preventive measures yields cost-effective outcomes, with an estimated €1 of EU investment potentially saving €4 to €7 in response and recovery expenses (Pronto et al., 2023).

Given the multifaceted impacts of wildfires on the economic, social, environmental, and security domains within the EU, addressing this issue demands a comprehensive approach spanning various policy dimensions. Consequently, it is imperative for the EU to address wildfire prevention across different policy areas to ensure synergy and avoid policy overlap

a. European Green Deal as area of analysis

In this paper, we selected the European Green Deal as the pioneering set of strategies that directly relate Climate Change effects to the increase of natural hazards. For this reason, even these policies have a holistic view is important to analyse if, within the policies proposed, there is a cohesion between them in order to prevent wildfires.

The European Green Deal is a holistic initiative proposed by the European Commission to steer the EU towards a sustainable, low-carbon economy. At its core, the deal aims to combat climate change, biodiversity loss, and environmental degradation while fostering economic growth and social equity.

Central to the European Green Deal is the commitment to achieving carbon neutrality by 2050. By transitioning away from fossil fuels and towards renewable energy sources, the EU seeks to reduce greenhouse gas emissions, mitigating the impacts of climate change. This is particularly relevant to wildfires, as climate change exacerbates conditions conducive to their occurrence (The European Green Deal, 2021).

Furthermore, the deal emphasizes sustainable forest management and biodiversity conservation. Healthy forests are less susceptible to wildfires, so efforts to protect and restore ecosystems can indirectly mitigate wildfire risks. Additionally, promoting a circular economy and improving energy efficiency contribute to reducing resource consumption and environmental pressures, which can indirectly impact wildfire occurrences.

Moreover, the European Green Deal prioritizes community resilience to climate-related risks, including wildfires. Measures to support communities in wildfire-prone areas, such as improved fire management practices and early warning systems, are integral to building resilience and reducing the impacts of wildfires (The European Green Deal, 2021).

At the moment, the European Green Deal has set 167 carriages (proposals of policies and strategies) in the legislative train of the European Union. Some objectives of the European Green Deal are directly related with the prevention of wildfires in the Member States countries, therefore the cohesion of these policies is essential in order to achieve this objective (European Parliament, 2024).

b. Experts evidences regarding wildfire prevention

The wildfire prevention topic has grown in importance in the recent decades around the world. Academic fields of the academy have done recommendations in order to diminish the risk of wildfire from the different approaches. In this context, the European Commission - with the support of wildfire experts from around the world - has published in 2021 a booklet that provides a summary of the current and future trends of wildfire in Europe as well as an overview of existing land-based wildfire prevention and good practices to manage this issue.

Governance plays a crucial role in wildfire prevention by delineating responsibilities for protection, prevention, and management among different organizations or departments. It is vital to integrate wildfire prevention into landscape planning and forest management priorities, even if these responsibilities are divided among various entities. Regular meetings and information sharing are essential for achieving a unified approach, particularly when responsibilities are dispersed. A shared vision and awareness of risks among involved entities are also necessary for effective wildfire prevention efforts. (European Commission, 2021a p.18).

The text underscores the importance of planning in wildfire prevention, advocating for resilient landscapes and societies through comprehensive risk assessment and management. Planning stages include scoping, survey, risk assessment, implementation, monitoring, and review, with contingency plans for unforeseen developments. Recognizing the impact of climate and weather conditions, planning strategies must adapt accordingly. Populations near green spaces must understand wildfire risks, especially as urban areas extend into rural

zones, increasing the population at risk. Awareness and education are crucial, particularly in regions like the European Alps where wildfires can trigger secondary hazards like mudflows or avalanches. Urban development near wildfire-prone areas requires risk assessment, and planning must involve wide consultation with stakeholders to foster support and awareness. (European Commission, 2021a, p.20).

Forest management practices is one of the principal strategies proposed in the paper, aimed for reducing a forest's vulnerability to wildfires. This includes considerations such as selecting tree species best adapted to current and future climatic conditions, deciduous species, and promoting age and species diversity to create a more complex forest structure that can slow fire spread. Variable retention treatments are recommended to increase discontinuities in flammable fuels, while managing fuel loads through practices like prescribed burning and biomass collection can reduce combustion risks. Landscape planning that accounts for wildfire risk, investing in wildfire expertise, and promoting the exchange of knowledge are also emphasized. Additionally, creating mosaic landscapes with diverse functions and ecosystems is suggested to effectively manage fuel loads and support rural economic activities while providing education and training on land management techniques (European Commission, 2021a, p.22-30).

Also, the text emphasizes the critical role of people in wildfire prevention strategies, as they can both cause and be affected by wildfires. Increasing awareness among the public about activities that can lead to wildfires and those that can mitigate risk is crucial. With wildfires posing a European problem, there's a need to raise continent-wide awareness, especially during the main holiday period when tourist movements increase, potentially exacerbating wildfire risks due to lack of local knowledge and language barriers. Infrastructure like roads and railways can also increase ignition risks and require attention. Addressing rural abandonment is another key aspect, aiming to preserve traditional land-management knowledge and promote sustainable forestry practices by

providing sustainable job opportunities in rural areas and ensuring essential services and modern amenities to attract younger generations. EU policies support these objectives (European Commission, 2021a, p.30-32).

These recommendations will be used in this paper in order to select the objectives and implementation proposals regarding wildfire prevention in the analysed policies from the EGD.

3. Theoretical framework

Ensuring policy coherence has become a growing priority in governance and policymaking within the EU and its MS. As well as for the policymakers, this concept has gained importance for the academic discourse, and this is reflected in the blooming number of papers that have been released addressing the different layers of the concept.

Policy coherence has been a rapidly growing concept in the last few decades. Before the twenty-first century, it was directly related with the policy integration and policy coherence, seen by some authors as the possible outcome of integration and coordination of policies (Trein, 1996). Nevertheless, in the academic field evolution, has been separated from these concepts and acquired significance for itself being analysed by different authors. May et al. (2005) point out that policy coherence ‘‘implies that various components of policies correspond because they share a set of ideas or objectives’’ (2005: 37). Therefore, policy coherence refers to the process where policymakers design a set of policies in a way that, if properly implemented, they can possibly achieve a larger goal (Cejudo and Michel, 2016). Put differently, policy coherence refers to the alignment of policies within a particular domain, wherein these policies work together to enhance the likelihood of achieving their objectives. Achieving policy coherence primarily hinges on effective implementation, typically during the design phase.

For some other authors, this concept implies that policy coherence should be an attribute between policies that systematically reduces conflicts and promotes synergies between and within different policy areas to achieve the outcomes associated with agreed policy objectives (Nilsson et al, 2012). In this perspective of policy coherence have synthetized the view of authors such as Hertog and Stross (2011) who discuss the legal foundations of policy coherence, initially regarding external policies, and later adapted to environmental policies by Nilsson (2012).

In this paper, "policy domain" will not be employed to denote a specific policy sector, such as the environmental policies of the EU, as might be expected. Rather, it encompasses a collection of policies aimed at tackling a common complex issue. For the purpose of our analysis in this paper, we have designated wildfire prevention as the focal policy domain for examination. Our definition, in this analysis, would be mainly based on the Cejudo's (2016) approach where looks for the complementation between policies in order to potentially achieve a larger goal.

The dimensions of coherence identified regarding the level analysed are: vertical or horizontal, and internal or external. The first pair, explain the direction of interactions of the policies analysed, where vertical could be the relationship of the EU and the MS, and horizontal policy areas at one level (Nutall, 2005). The second variable exemplifies the dimension of these interactions, being internal the study of a single policy domain and external the study of different sectoral policies (Nilsson et al., 2012).

In this same line of our definition of coherence, Cejudo (2017) considers that when analysing the level of coherence of a set of policies, there are three ways in which it can be addressed. Between the objectives of the policies, the instruments, and the target population. The objectives refer to the consistency between the individual objectives of the policies that coexist within the same policy domain; by observing the coherence of the instruments is meant to see how different policy design can contribute to solve the same problem with their different tools; and coherence among target population observe if all the population affected by this problem are included in the policies analysed.

4. Methodologies of the research

The first part of the paper will establish a theoretical framework by reviewing literature and examining bibliographic sources to define coherence. It will discuss various approaches to the topic and establish the specific definition of coherence to be analysed.

In the second part, after a thorough review of relevant papers, policy documents, strategies, and articles related to wildfire prevention in the EU within the context of the European Green New Deal, we selected the policies to analyse. In this case we selected the **Forest Strategy 2030**, the **Biodiversity Strategy 2030**, the **Adaptation to Climate Change Strategy** and the **Farm to Fork Strategy**, all of them adopted except for the Biodiversity Strategy 2030 which just has been announced (European Commission, 2021b) (European Commission, 2021c) (European Commission, 2020a) (European Commission, 2020b). These policies mention wildfires specifically or more general nomenclatures that involve them, such as effects of climate change, natural hazards or natural catastrophes.

In order to define the criteria to analyse the coherence between these policies, we designed a methodology based on the Cejudo's levels of coherence (2017). The main components to analyse, according to the author, are: policy objectives, policy instruments and policy target. We designed specific parameters inside this main components in order to adapt it to the topic of research and achieve more meticulous results.

The central part of the analysis will be made by defining the level of coherence with the different levels that Cejudo (2017) establishes when analysing coherence between the selected horizontal policies. We will measure the coherence between the policy objectives of the policies by, firstly, scrutinizing the alignment of individual goals within the wildfire prevention domain. Secondly, our analysis will focus on coherence among the instruments employed, evaluating how diverse policy designs and tools contribute collectively to address the wildfire challenge. Lastly, we will explore coherence concerning the target population, ensuring that

all segments affected by wildfires are adequately encompassed within the policies under scrutiny. By employing this comprehensive framework, we aim to elucidate the interconnectedness and effectiveness of EU policies in mitigating the impact of wildfires across various dimensions, fostering a more holistic understanding of wildfire prevention efforts within and beyond the European Union. We will present our findings in a table format to facilitate interpretation and comparison.

5. Analysis of coherence

According to Cejudo (2017) we can observe 3 different levels of coherence when analysing a set of policies that want to achieve a larger goal. First of all, at Level 1, policies could simultaneously operate without getting in each other's way, but without contributing in a clear and differentiated manner to solve the same complex problem. Secondly, Level 2, policies complement each other, and could contribute to address the complex problem. Finally, at level 3 policies complement each other in order to address the complex problem, and they would be enough to do it comprehensively.

In the Table 1 we have selected the principal policies from the European Green Deal that affect the wildfire issue in the EU, looking for keywords such as wildfire, natural catastrophe or natural hazard.

At present, it is essential to highlight that none of the measures proposed by the European Green Deal carry legal binding status. Therefore, the recommendations made thus far do not imply the implementation of any concrete preventive measures (Pronto et al., 2023)

Table 1. Analysis of the attributes of coherence that appear in the EGD selected policies

		Forest Strategy 2030	Climate Change Adaptation Strategy	Biodiversity Strategy 2030	Farm to fork Strategy
	Type of policy	Strategy	Strategy	Strategy	Strategy
	Stage of the policy	Adopted (November 2023)	Adopted (March 2021)	Announced (February 2020)	Adopted (May 2020)
Policy Goals	**General objectives**	- Improve the quantity and the quality of EU forests - Strengthen their protection, restoration, and resilience.	Make the adaptation to CC: - Smarter (increase awareness and knowledge) - Swifter - More systemic (to all systems and sectors) - Step up international action	- Reverse the degradation of the ecosystems. - Build our societies' resilience to future threats	Sustainable food system that: - Mitigates and adapt CC - Neutral/positive environmental impact - Reverse biodiversity loss - Ensure food security - Affordably food
	Specific Wildfire Objectives	Reduce cost of natural catastrophes by increasing resilience	Reduce climate related - risk	- Mitigate impact of natural catastrophes	- Achieve a resilient and sustainable food system to adapt to CC threads (wildfires) - Security food system to be resilient to threads (wildfires)
Policy Instruments	**Funding**	NextGeneration EU 30% multiannual EU budget (2021-2028)	NextGeneration EU 30% multiannual EU budget (2021-2028)	NextGeneration EU 30% multiannual EU budget (2021-2028)	NextGeneration EU 30% multiannual EU budget (2021-2028)
	Implementation proposal affecting wildfires	- Stimulating rural activity - Integrated landscape fire management - Planting 3000 million trees	- Adapt the programme of Climate-ADAPT - Include natural catastrophes in the initial EU's budged - Nature based solutions for the prevention. - Stimulate cohesion and coordination of EU MS policies	- Rigorous protection of mature and primary forests - Increase quality, quantity and resilience of EU forests - Nature based solutions in the urban-nature areas - Measure and integration of nature value	- Contingency plan for ensuring food supply and food security to be put in place in times of crisis - Increase organic farming and animal welfare
Policy Target	**Policy area**	Agriculture and Rural Development	Environment Ex-Ante Impact Assessement	Agriculture and Rural Development Environment	Agriculture and Rural Development
	Actors Involved	EU Member States	EU Member States	EU Member States	EU Member States

Source: Own elaboration

a. Policy goals coherence

First, analysing the attributes of coherence, we analysed the policy goals which show the main line of these policies integrated into the analysis the specific objectives affecting the wildfire problem. In this analysis, we will take into account the recommendations of the European Commission's paper regarding wildfire prevention measures and how these interact with one another in terms of coherence.

Regarding the coherence goals between **Forest Strategy 2030** and **Climate Change Adaptation Strategy**: Both strategies aim to address environmental challenges, with the FS focusing on forest protection and resilience, while the CCAS targets adaptation to climate change impacts. There may be potential synergies, we just can identify the aim to reduce cost of natural catastrophes and risk of climate related threads respectively as a similar point of work. Therefore, in this case, it is important to point out that the two policies can simultaneously operate due to the fact that both want to diminish natural catastrophes effects. It is also indispensable to remark that, regarding wildfire objectives, the FS appeals to the cost of these hazards and the CCAS by reducing its risks, so these two will probably not overlap. In this case, as the CCAS has a broader view in the general objectives and will probably influence the FS when applying these and so on, overlapping. In this case, the level of coherence according to these synergies could be approximately level 2.

Regarding coherence between **Forest Strategy 2030** and **Biodiversity Strategy 2030**: The FS's goals of protecting and restoring forests align with the objectives of the BS, which aims to reverse ecosystem degradation and conserve biodiversity. Between these policies there is the aim in both to increase resilience and to improve the ecosystems having from different areas the same perspective. In the case of the BS they refer to "mitigate impact of natural catastrophes" which, related with the "reduction of costs" we can assume that both refer to decrease this risk. Analysed this possible synergies on the formulation of objectives, forest protection and restoration efforts can directly contribute to biodiversity conservation, giving to this relation of policies a level 2 of coherence.

In the analysis between **Forest Strategy 2030** and **Farm to Fork Strategy**: While the FS primarily focuses on forestry-related issues, there may be indirect synergies with the FFS in terms of promoting sustainable land management practices which means that these could simultaneously operate. This set of policies, they both want to contribute to achieve resilient systems to natural threads related to climate change, they do it from different areas which are necessary to relate in this process. In the case of these policies, the specific wildfire goals might be related, as those want to increase resilience to natural threads in the forests and farming sectors but not specifically regarding the complex problem analysing. In consequence, the level of coherence of this set could be level 1 of coherence.

Regarding the policies of **Climate Change Adaptation Strategy** and **Biodiversity Strategy 2030**: Both strategies address interconnected environmental challenges, with the CCAS focusing on adapting to climate change impacts and the BS targeting ecosystem conservation. There may be potential synergies in terms of enhancing ecosystem resilience to climate change effects, which can contribute to biodiversity conservation efforts which implies simultaneous operation. Also, both policies refer to the objective to diminish the impact of natural catastrophes, imparting great importance of the wildfire identified objectives with the general ones, meaning that these policies can contribute to each other when addressing the wildfire issue. Building ecosystem resilience and protecting biodiversity can enhance adaptation efforts to reduce this possible wildfires, thus in this case these policies can more comprehensively achieve the proposed large problem than others, level 2.

In the analysis between the **Climate Change Adaptation Strategy** and **Farm to Fork Strategy:** The CCAS's emphasis on climate-resilient practices may align with the objectives of the FFA, particularly in promoting resilience in all the sectors. There are many objectives that are not connected with the other policies which but all of them related with the aim of achieving resilience in the sectors mentioned complementing each other. In this case, taking into account that can simultaneously operate, and complement each other without getting into each other way, these policies might have a level 2 of coherence.

Regarding **Biodiversity Strategy 2030** and **Farm to Fork Strategy**: Both strategies aim to promote environmental sustainability, with the BS focusing on

biodiversity conservation and the FFS targeting sustainable food systems. There may be potential synergies in terms of promoting agricultural practices that support biodiversity conservation and ecosystem health while ensuring food security as well as reversing biodiversity loss. In this case, the general objectives are mainly aligned in the same direction, whereas the ones regarding wildfire are addressed from the mitigation of the causes. In this case, the objectives might simultaneous operate, but there will not be a direct contribution to solve the complex problem, according to the level of coherence 1.

Having analysed this part, we can observe in Table 2 how these objectives interrelate, being the Climate Change Adaption Strategy the one more coherent in goals with the others, and the Farm to Fork Strategy the less coherent, both with not much difference.

In this case is important to remark that any of the punctuations can achieve the level 3 due to the fact that there are existing gaps between these policies and experts in the field of wildfires should decide if these policies are enough to cover the complex problem which is the prevention of wildfires.

Table 2. Results of objective's cohesion

	Forest Strategy 2030	**Climate Change Adaptation Strategy**	**Biodiversity Strategy 2030**	**Farm to fork Strategy**	**TOTAL**
Forest Strategy 2030	-	2	2	1	**5**
Climate Change Adaptation Strategy	2	-	2	2	**6**
Biodiversity Strategy 2030	2	2	-	1	**5**
Farm to fork Strategy	1	2	1	-	**4**
TOTAL	**5**	**6**	**5**	**4**	

Source: Own elaboration

b. Policy instruments coherence

When examining policy objectives, our approach centres on delving into the proposed strategies aimed at achieving these goals. We posit that these proposals will serve as the bridge between objectives and actionable steps, elucidating how each goal will be funded and executed.

We want to remark that it is important to specify the funding, considering that these will be the ones that finance these policies. In this case, the European Green Deal is one of the principals projects of this multiannual mandate, so the funding will be the 30% of the multiannual EU budged as well as the Next Generation EU funding.

In this case, analysing the coherence in the policy instruments of the **Forest Strategy 2030** and the **Climate Change Adaptation Strategy,** we can perceive the following synergies. There is not an overlapping of instruments, meaning that these instruments will not be double. In this case, seems that the proposals can simultaneity operate and that indeed complement each other due to the proposal of integrated fire landscape management and stimulation of rural activity from the FS that aligns with look for nature based solutions in the prevention of wildfires. In this case, planting 3000 trees without the proper direction of preventing wildfires could be a problem of coherence, but this is case is a gap in this comparison. The policies seem to not overlap and even the gaps, these contribute to address the complex problem in different areas, meaning a level of coherence 2.

Regarding **Forest Strategy 2030** and the **Biodiversity Strategy 2030**: here we can observe less coherence than in the others. The BS presents proposals that differ from the FS ones, in terms of protection of mature forests and primary forests might enter into controversy with the proposals of stimulation of rural activity and use of integrated fire managements. Also, there are some synergies, such as increasing the quality and quantity of forests with the planning of 3000 million trees. The use of nature based solutions from the BS could be seen as a synergy as well. Even these policies might operate and compliment together, there are many aspects that overlap and the complex problem is not comprehensively addressed according to a level 1 of coherence.

Regarding **Forest Strategy 2030** and **Farm to Fork Strategy**: the policies do not overlap due to the fact that the proposals are very different in each strategy. The

proposal to stimulate the rural activity compliment the FFS proposals observing one synergy with increasing organic farming seeing in this case, indirect contribution between them. Even these synergies there are not directly aim to contribute to the complex problem, so the level of coherence would be 1.

Regarding **Climate Change Adaptation Strategy** and **Biodiversity Strategy 2030**: There is some overlapping of proposals, nature based solutions is mention in both strategies. In this case, the there is also a possible complementation between the proposal of including natural catastrophes in the initial EU's budged and the BS proposal regarding measuring and integrating the value of nature. There are so overlapping and synergies and with the proposals could contribute to address the complex problem of wildfires, meaning a level 2 of coherence.

Regarding **Climate Change Adaptation Strategy** and **Farm to Fork Strategy**: in this case the strategies can simultaneously operate due that there is non overlapping between the proposals. The proposals do not refer to each other or have connection, neither the synergy of the proposals contribute to the complex problem: Regarding this evaluation, the coherence taking into account the focus on wildfires would be 2.

Regarding **Biodiversity Strategy 2030** and **Farm to Fork Strategy**: we can observe as well a synergy between the BS of looking for nature based solutions and the proposal of increasing farming (specifically organic). Also, there is a complementation of integrating the value of nature in the new products proposed by the FFS. There is complementation and not overlapping, thus the complex problem is not totally addressed by these policies, implying the level 2 of coherence.

As we can observe from the overall scores, the results of coherence are lower from the comparison of coherence between policy goals. In general the policies do not overlap, but the complex problem is less addressed than in the general objectives.

Table 3. Results of instrument's cohesion

	Forest Strategy 2030	Climate Change Adaptation Strategy	Biodiversity Strategy 2030	Farm to fork Strategy	TOTAL
Forest Strategy 2030	-	2	1	1	**4**
Climate Change Adaptation Strategy	2	-	2	1	**5**
Biodiversity Strategy 2030	1	2	-	2	**5**
Farm to fork Strategy	1	1	2	-	**4**
TOTAL	**4**	**5**	**5**	**4**	

Source: Own elaboration

c. Policy target coherence

In this analysis, the primary focus lies not on the delineation of policy targets themselves, but rather on the contextual framework within which these policies operate. It's imperative to recognize that these policies represent a collective effort from various sectors within the European Union, aimed at guiding Member States in the allocation of resources toward the realization of the European Green Deal.

These strategies are focused on the lines to follow by the Member States in order to achieve the objectives of the European Green Deal. Thus, the principal policy sectors involved are Agriculture and Rural Development and Environment.

6. Conclusions

Wildfires have emerged as a pressing global issue, fuelled by their escalating frequency and intensity, which are aggravated by the effects of climate change. The wildfire landscape in Europe differs from that of regions like South America, Australia, or Canada due to various factors such as geography, land management practices, societal changes and shifts in land use have amplified the risks associated with wildfires. A holistic approach is imperative to mitigate these challenges effectively, safeguarding both human lives and the environment, while also ensuring the resilience of economies.

Recognizing the urgency of addressing wildfire threats, the European Union has prioritized this issue within its environmental agenda, notably through initiatives such as the European Green Deal. The EGD represents a transformative initiative aimed at steering the EU towards a sustainable, low-carbon future, with a focus on combatting climate change, biodiversity loss, and environmental degradation. Given the interconnection between wildfires and these broader environmental concerns, integrating wildfire risk mitigation aligns seamlessly with the objectives of the EGD.

The EGD furnishes a robust framework for tackling wildfire risks, encompassing key pillars such as the promotion of renewable energy, sustainable forest management, biodiversity conservation, and bolstering community resilience. By transitioning towards carbon neutrality, enhancing the resilience of forests, and advocating for sustainable land management practices, the EU endeavours to manage wildfire risks while strengthening its capacity to adapt to evolving environmental challenges.

Thus, having confirmed, that is necessary a holistic approach to solve this problematic and that the European Union has an increasing vulnerable situation, this study has analysed the coherence of policies that intervene in the process of prevention of wildfires. This research has found the most influential policies of the EGD in the prevention phase of the emergency and have compared different elements that align with scientifical evidences, summarized on a table. The designed methodology focused on policy objectives, policy instruments and policy targets between each policy, based on the Cejudo's levels of coherence

summarizing the analysis of each set of policies in a table in order to visualize and compare the results.

Despite initial expectations of fragmented approaches due to the absence of a unified strategy, the analysis reveals a surprisingly high level of coherence among policies, particularly evident in the Climate Change Adaptation Strategy and the Biodiversity Strategy 2030. Despite these findings, given the high risk involved in the topic, the level of coherence is insufficient considering that none of these policies fully deal with the multifaceted nature of wildfires and achieve a totally comprehensive management in the prevention phase.

The analysis of the policies reveals a complex landscape of interactions and potential synergies. Firstly, in terms of overlap, it's evident that while some policies share common objectives, they also diverge in their approaches. For instance, the Forest Strategy 2030 and Climate Change Adaptation Strategy both aim to tackle environmental challenges but focus on different aspects, suggesting minimal direct overlap. Similarly, the Forest Strategy 2030 and Biodiversity Strategy 2030 exhibit partial overlap, particularly in objectives related to forest protection and restoration.

When assessing whether these policies reinforce each other, we find instances of alignment and potential synergies. The Forest Strategy 2030 and Climate Change Adaptation Strategy, show potential reinforcement through shared goals such as reducing the cost of natural catastrophes. Likewise, the Climate Change Adaptation Strategy and Biodiversity Strategy 2030 exhibit reinforcement in enhancing ecosystem resilience.

The adequacy of these policies in achieving the larger goal of the policy domain, particularly in addressing the complex problem of wildfires, remains a point of consideration. While some policies show potential to comprehensively contribute to this goal, such as the Climate Change Adaptation Strategy and Biodiversity Strategy 2030 with their focus on enhancing ecosystem resilience, others may not directly address the issue. There are noted gaps between policies, suggesting that further expert assessment is needed to determine if these policies collectively suffice to address the complex issue of wildfires.

Adhering to established academic principles of coherence analysis, the methodology employed in this study acknowledges the effects of subjective biases

to influence conclusions. Despite the observed coherence, these mentioned gaps have been translated by experts in the subject into underscoring the necessity for a comprehensive Wildfire Governance approach to ensure efficacious management (Montiel-Molina, 2013). In such a complex topic, this methodology helps us to see the magnitude of coherence in the policy design, but there are many others factors that might influence in the outcome. The funding used in each country and the specific policies that the actors create can be future lines of research in order to accomplish a more comprehensive analysis of the coherence of these policies.

Navigating coherence in wildfire prevention policies is inherently challenging, given the complexity of the issue and the subjective nature of coherence analysis. Nevertheless, assessing coherence remains pivotal in establishing areas of alignment and discord within policy frameworks. This study can furnish valuable guidance for policymakers endeavouring to enhance the coherence and efficacy of wildfire prevention strategies, thereby fortifying resilience against this escalating global threat.

Even the complexity of the issue, the EU has started to increase the efforts and concern in order to manage the wildfire issue from all the possible stages. As an initial wide-ranging point the European Green Deal could be used a guideline for the Member States domestic policies but taking into account that a more comprehensive approach is needed. Meanwhile, it is indispensable to increment the actual levels of coherence to keep at bay on the future scenarios that wildfires will bring us.

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