# POLICY COHERENCE OF THE EU COMMON AGRICULTURAL POLICY

## WITHIN THE NEXUS BETWEEN WATER, ENERGY, LAND, FOOD AND CLIMATE **DEPENDS ON POLICY IMPLEMENTATION**

## Key messages

At the European Union level, there is a **strong policy coherence** between the cross-compliance and environmental objectives of the current Common Agricultural Policy (CAP) and policies on water, land, energy and climate. Also, rural development policy and stimulation of competitiveness of the agricultural sector by the CAP may be in line with these objectives, if rural environmental objectives are met and competitiveness is reached by resource efficiency. However, **coherence in implementation on national, regional and local levels has been weaker**, leading to conflicts in policy implementation both vertically between administrative levels and horizontally between sectors.

These findings **support the proposal by DG Agriculture and Rural Development**[1] for the CAP 2021 – 2027 to **reinforce the conditionality for receiving public CAP funding**. According to this proposal, **CAP public funding should be more explicitly based on compliance with environmental objectives and delivering environmental public services**. There is great technical potential for the agricultural sector to contribute to the improvement of water, land and landscape management, climate change mitigation and adaptation, and an efficient use of energy and resources, but putting this into practice is proving rather difficult. The CAP and policies on water, land, energy and climate could **explicitly address mutual conflicts and opportunities** for synergy, and develop a regulation on how to cope with them.

**Policy coherence issues related to the nexus between water, land, energy, food and climate, as observed at an EU level, were also encountered on national and regional levels. Those most relevant for the CAP are:**

1. The **positive effects caused by good practices** in water and land management: restoration of soils, prevention of soil erosion and reforestation are nature-based solutions to combat flooding and drought, are synergistic with climate change mitigation and adaptation and also support agriculture. These synergies were confirmed by the cases in the Czech Republic, Slovakia, Germany, Andalusia, and South-West England.

2. The positive effects of **increasing energy and water efficiency, resource efficiency in the agro-food chain, and reduction in the use of water and energy**. These are fundamental measures that serve all sectors within the nexus and are synergistic with climate change mitigation and adaptation. These synergies were mentioned by the cases Greece, Latvia, Andalusia and Sardinia.

3. Internal **conflicts that may exist in agriculture policy between economic and environmental objectives** with trade-offs on water, land, energy and climate objectives. These conflicts were confirmed by the cases in Latvia, Andalusia, South-West England, Czech Republic, Slovakia and Germany. On the other hand, agriculture has the potential to deliver environmental public services and to positively interact with water, land, nature, energy and climate.

4. **Competition for scarce water and land**, confirmed by the cases in the Netherlands, Czech Republic, Germany and the Upper-Rhine basin in Germany and France.

5. **Negative trade-off with the production of first-generation biofuel crops**. Large-scale monoculture changes the agricultural landscape, regional hydrology and local climate, as mentioned by the cases in the Czech Republic, Slovakia and Germany.

[1] European Commission DG Agriculture and Rural Development, 2019. The post-2020 Common Agricultural Policy: Environmental Benefits and Simplification.

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# The SIM4NEXUS Horizon 2020 project

SIM4NEXUS mapped and analysed the policy coherence between the current CAP and current policies on water, land, energy and climate, in **nine case studies**, covering **Greece, Latvia, the Netherlands, Sweden, Andalusia (Spain), Sardinia (Italy), South-West England (United Kingdom)** and two transboundary areas including the **Czech Republic, Slovakia and Germany**; and the **Upper-Rhine basin** in Germany and France.

Water, land, food, energy, and climate are interconnected, comprising a coherent system (the 'Nexus'), dominated by complexity and feedback (see Figure 1[2]). Putting pressure on or solving problems in one part of the Nexus may create pressures in one or more of the others. Management of the Nexus is critical to securing the efficient use of our scarce resources. SIM4NEXUS aims to assess long-term society-wide impacts of resource use and policies in the above-mentioned sectors.

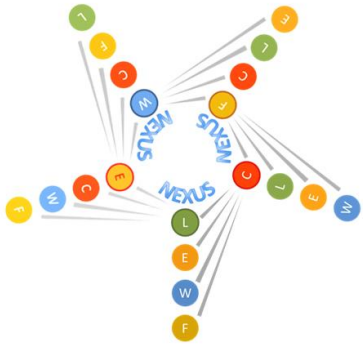


Figure 1: Schema of the Nexus dimensions interlinkages

# Policy coherence

Policy coherence is defined as an attribute of policy referring to the systematic effort to reduce conflicts and promote synergies within and between individual policy areas at various administrative and spatial scales [3] [4] [5]. The investigation of policy in the SIM4NEXUS project focuses on the analysis of the coherence between policy objectives and instruments on water, land, energy, food and climate.

**Policy synergy** manifests when the combined efforts of two or more policies can accomplish more than the sum of the separate results from each policy. Policies reinforce each other. For example, the combination of investment in research and innovative pilot projects with a clear emission target may give a boost to innovation and uptake of new clean technologies, whereas investments without a clear target or a target without related investments would not be as effective.

**Policy conflict** manifests when the goals and instruments of one policy impede those of another policy. When conflicts arise, choices should be made about the related trade-offs. This implies choosing to reduce or postpone one or more desirable outcomes in exchange for increasing or obtaining other desirable outcomes. This choice requires political compromise.

Policy coherence between policy documents is not a guarantee for coherence in practice, as was stated by stakeholders in the Greek, Latvian and Germany-France cases. The other way round, policy conflicts 'on paper' could turn out more synergistic in practice, as was noted by Swedish stakeholders about the conflicting relationship between agricultural economic and overall environmental objectives. Examples are described below.

# Vertical policy coherence

Because of the socio-economic and bio-physical differences and differences in governance, the **implementation of framework policies may be received and play out differently in the Member States**. Also, policy incoherence at an EU level

[2] Laspidou, C. et al. (2017): D1.1 Scientific Inventory of the Nexus. SIM4NEXUS Deliverable. Available at: https://www.sim4nexus.eu/userfiles/Deliverables/D1.1%20Final%20submitted%20v03.pdf

[3] Munaretto, S., & Witmer, M. (2017). *D2.1 Water-Land-Energy-Food-Climate Nexus: Policies and Policy Coherence at European and International Scale*. The Hague: SIM4NEXUS; PBL. https://www.sim4nexus.eu/page.php?wert=Deliverables#collapse107

[4] Nilsson, Mans, Griggs, D., & Visbeck, M. (2016). Map the interactions between sustainable development goals. *Nature*, *534*(7607), 320–323.

[5] Nilsson, Måns, Zamparutti, T., Petersen, J. E., Nykvist, B., Rudberg, P., & McGuinn, J. (2012). Understanding policy coherence: analytical framework and examples of sector–environment policy interactions in the EU. *Environmental Policy and Governance*, *22*(6), 395–423.

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may hamper implementation on national and regional scales, because conflicts between policies become manifest when implemented.

The **following factors** that **hamper vertical coherence in the CAP implementation practice** have been identified by SIM4NEXUS:

1. **Incoherence at an EU level hampers implementation**, e.g.:
   - *In the Czech Republic,* national financial support in the production of energy crops driven by the EU Renewable Energy Directive is hampering the achievement of the EU good water quality objectives.
   - *In Germany,* good water quality objectives collide with the interests of other sectors, particularly agriculture.
2. **Lack of clarity in EU policy documents**, e.g.:
   - *In the Netherlands,* stakeholders mentioned a lack of clarity in the CAP regarding the production of biomass and a lack of clear and binding sustainability criteria for biomass production.
3. **Overregulation: too many rules make EU policy difficult to implement**, e.g.:
   - *In the Czech Republic,* farmers are discouraged to apply for funding of agro-environmental measures of the CAP due to the heavy administrative burden.
4. **Lack of stringency of EU regulation**, e.g.:
   - *In Sweden*, EU regulation was implemented to meet minimum requirements with little impact in practice.
   - *In the Czech Republic*, greening measures were implemented to the minimum, for example, mowing of existing grassland was sufficient to meet the requirement of maintaining grassland cover.
   - *In the Czech Republic*, the freedom for Member States to determine the level of stringency of the Good Agricultural and Environmental Conditions (GAECs) under the CAP is causing unsustainable agricultural practices leading to disturbed hydrology and local climate change.
5. **Transboundary differences in governance structures**, e.g.:
   - *In the Upper-Rhine basin*, it may be hard to identify the right counterparts on the other side of the border for interaction on certain subjects which makes transboundary cooperation difficult.
6. **Lack of financial resources for shared transboundary projects**, e.g.:
   - *In the Upper-Rhine basin*, difficulty to obtain financial resources for transboundary projects and research was mentioned as a problem; but also available budget has not always been fully exploited by eligible partners due to disagreements about project design and implementation.

# Horizontal policy coherence

**The EU level**

The agricultural sector has **opportunities to deliver services** to the other sectors within the nexus, but these opportunities are not always seized. **Financial support to farms and rural areas, and stimulating the competitiveness of the agricultural sector may have either a positive or negative impact** on one or more of the other sectors, depending on the implementation. There is **synergy if cross-compliance stimulates** the achievement of environmental objectives and funds are used for climate mitigation and adaptation services, restoration of soils, prevention of soil degradation and reforestation. There is also synergy if increasing competitiveness in the agricultural sector means increasing energy efficiency and resource efficiency.

**Increasing biofuel production is the most conflicting objective**, in this assessment of coherence, if it is assumed that biofuel is made from **first-generation food crops**. Growing this biomass may contribute to farm income, support the rural economy and reduce greenhouse gas emissions. However, conflicts may arise regarding policy objectives on **water quantity, water quality, water use and flood risk management**. It may also conflict with objectives on **land use**, such as combatting soil degradation and may even conflict with **climate objectives**, namely those regarding the support for low-carbon technologies and climate-friendly land use.

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## The National and Regional levels

The national, regional and transboundary cases of the project SIM4NEXUS analysed the horizontal coherence between a selection of policies for water, energy, land, agriculture, food, and climate, that was relevant for their case. Most of the policy objectives are directly related to EU policies. There are **more synergies than conflicts** between the selected policy objectives, as was also found at the EU level. The **greening objectives in the CAP create opportunities** for coherence between agricultural and environmental objectives, but they may also create internal conflicts between economic and environmental objectives of the CAP.

At the national and regional levels, the following horizontal synergies and conflicts were identified:

In **Greece**, conflicts arise from allocation of scarce water resources during the summer season. Water is reported to be overused for irrigation, mainly by the agricultural sector. Farmers also complain if scarce water is allocated to environmental flow. Policies that subsidise water-intensive crops, for example cotton, conflict with policies on sustainable management of water resources that promote crop restructuring to reduce additional pressure on water resources. The Greek Government provides energy subsidies for irrigation to farmers to boost agriculture and food production. Moreover, as agricultural water in Greece is provided free-of-charge to farmers, there are no incentives for the farmers to minimise water losses. Finally, pollution from the use of pesticides deteriorates water quality.

Picture 1: Irrigation agriculture puts severe pressures on water resources in Greece.

In **Latvia**, implementation of the CAP through the National Rural Development Program (NRDP) 2014–2020 has been successful, so far, according to the Latvian Ministry of Agriculture. Availability of EU funding secured an increase in agricultural production of 130% and a threefold increase in income per person employed in agriculture in 2017, compared to 2004 income levels. Within this period, the added value of agriculture increased by 39%. However, environmental NGOs report that current agricultural practices are incompatible with environmental sustainability objectives, resulting for example in the loss of semi-natural meadows and increases in greenhouse gas emissions from soil management practices (e.g. increase in nitrous oxide emissions because of the application of fertilizers, increase in $CO_2$ emissions because of the liming of soils), manure management and from the enteric fermentation related to domestic livestock. Increasing the production and use of renewable energy from biofuels and biomass is ambiguous. Growing crops and fast-growing trees for the production of energy biomass helps to increase the share of renewable energy sources in energy production in Latvia and other Member States that import this biomass, and increases the use of local energy sources, in line with energy, energy security and climate objectives, as well as economic agriculture objectives. However, expansion and intensification of agriculture to increase production is mentioned as a severe problem for water, land and even climate objectives. Expansion of arable land at the cost of forest, natural and semi-natural meadows, and the intensification of fertilizer use on existing arable land to increase yields of food or feed crops, conflict with climate change mitigation targets (greenhouse gas emissions and carbon sequestration) and have a negative impact on soil and water quality through the run-off of nutrients, pesticides and herbicides. It also reduces the land available for other agricultural production, causes fragmentation and degradation of land and deteriorates ecosystems and biodiversity, thus reducing the ability for adaptation to climate change.

In the **Netherlands**, the case focuses on biomass. Stakeholders mention compliance with rules and regulations across multiple policy sectors as a problem, such as EU policies on nature (Natura2000), agriculture (CAP) and water (Water Framework Directive). Businesses in bio-energy must deal with rules and regulations imposed by central, regional and local government authorities. Increasing productivity and efficiency of agriculture to harvest more bio-energy crops is synergistic with the economic development of rural areas and may support farm incomes. However, an increase in agricultural productivity may counteract the improvement of ecosystems. The other way around, crop diversification in agriculture, financial support for farmers, economic development of rural areas, ecosystem restoration, preservation and enhancement, and increase in sustainable agricultural production may increase biomass production. Conflicts may arise between the maintenance of permanent grassland, conservation of 5% of the area of ecological interest and cross compliance with sustainability and environmental standards on the one hand and increase in biomass productivity in agriculture on the other.

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In **Sweden**, there is a conflict between the market-oriented agricultural sector and competitive food supply chain, on the one side, and the more environmentally and climate-friendly objectives that would also support high biodiversity, on the other. It has been suggested by stakeholders that if Sweden would utilise its image of being an 'environmentally friendly' food producer more effectively and would build its market competitiveness on this image, this would lead to agricultural objectives being more aligned with environmental and climate goals. Furthermore, objectives such as biodiversity in forests and on agriculture land, as well as good quality surface water, groundwater and wetlands seem to be difficult to accomplish, as long as agricultural and forestry production both dominate. This is reflected in the failure to implement most of Sweden's Environmental Quality Objectives, in recent years. Higher priority has been given to intensification of production that does not support high biodiversity or improvement of water quality. In addition, the highest priority is given to climate change goals, which are not always in line with other environmental objectives. For example, intensification of wood harvesting for biomass production in forests may conflict with biodiversity objectives.

In **Andalucía (Spain)**, synergies are observed between resource efficiency in the agro-food sector and other domains, such as water and energy, while conflicts may occur between socio-economic objectives and environmental objectives in land use and agriculture. In agricultural policy, internal coherence is lower than in policy on other sectors. The objective 'Support ecological and conservation agriculture' mostly positively influences other nexus domains. Resource efficiency in the food chain also has many positive linkages in the nexus, as well as improvement of knowledge transfer and innovation in the agricultural sector and rural areas and improvement of sustainable competitiveness of the Andalusian agriculture and agro-industry. Whether improvement of competitiveness has positive or negative interactions with environmental objectives depends on the implementation—for example, on the degree to which it affects water quantity and quality, renewable energy is used and resource efficiency and climate goals are considered. Rationing water use to ensure long-term water supply supports irrigation efficiency improvements and enables sustainable competitiveness of the Andalusian agricultural and agro-industrial sector. Also, it is a necessary precondition for restoring, preserving and enhancing ecosystems related to agriculture and forestry. Progress in modernising existing irrigation systems may have positive effects on other objectives in the water domain but has largely negative effects on energy and climate, due to an increased energy use in modernised irrigation systems, regeneration and the desalinisation of water. The Spanish water delivery system changed from surface irrigation systems to pressurised systems, which is more water-efficient but also more energy-consuming. High energy costs are a big challenge for farmers.

In **Sardinia (Italy)**, the expansion of agriculture may negatively interact with other objectives within the nexus, depending on the implementation. For example, an increase in irrigated agricultural land, if not supported by measures to reduce and limit water consumption, may have a counterbalancing effect on the objective to reduce water demand in agriculture. Water demand in agriculture competes with water for domestic use, tourism and hydropower production. Resource efficiency in the agro-food chain and forestry is positively linked with nearly all other objectives.

In **South-West England (United Kingdom)**, South-West Waters, the regional water provider, has recognised that it is cheaper to help farmers deliver cleaner raw water to rivers and streams than it is to pay for the expensive filtration equipment required to treat polluted water after it is abstracted from the river and make it suitable for drinking. As a result, the Upstream Thinking partnership was initiated with the aim of improving raw water quality and water storage in the natural landscape to make the provision of drinking water more sustainable. Multiple potential conflicts exist within the agricultural policy; for example, protecting or enhancing agricultural standards will have different effects on large and small producers, which may not be able to meet the standards. The UK Renewable Heat Incentive (RHI) is set up to encourage the uptake of renewable heat technologies amongst households, communities and businesses, through financial incentives. The RHI subsidy has been widely used on a regional level. This policy support for energy generation can affect conditions in the food system, as bioenergy crops compete with the food and feed sector, and with the appropriateness of land use for growing such crops. Growing maize may generate energy, but it requires water, land can be left bare and subject to soil erosion. Also, subsidies do not take energy efficiency into account, nor long-term impacts of contracts and how these fit with agro-environmental schemes.

In the **Czech Republic and Slovakia**, the EU Renewable Energy Directive has been fully integrated into legislation. This is stimulating biofuel production and the use of agriculture biomass as a renewable resource, at the expense of soil quality and the local water regime. Agricultural soil and land are degrading and retention of water in agricultural land is rapidly decreasing. There is a discrepancy between the production of energy crops on the one hand, and good agricultural and environmental conditions (GAEC) and agro-environmental and climate measures, on the other. The use of biofuels may mitigate climate change, but the effect of growing biofuels from food crops on the water regime, climate, soil characteristics and quality go directly against climate objectives. Greening measures linked to the direct payments of the

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CAP have great potential to improve soil quality and the water regime in the agricultural landscape, in the Czech Republic. But these greening measures have only been partly implemented and did not lead to the expected results. According to 2015 data, ecological focus areas (EFAs) have been implemented only to a little extent. There has been no increase in the share of permanent grassland, as greening obligations have been met by mowing existing grassland. Crop diversification has also been applied so as to only meet the minimum requirements. The reason for keeping the implementation of greening and environmental measures to a minimum appears to be that non-productive elements in the landscape interfere with farm practices, lowering their efficiency. Agro-environmental and climate measures are voluntary and set by the Second Pillar of the CAP as part of the Rural Development Programme. The objective of the measures is to promote sustainable agricultural land use. Because these measures are voluntary, the success of their implementation heavily depends on access to the related subsidy—the administrative burden for the applicants currently is often too great for them to obtain the subsidies. Only a few farmers have chosen to adopt these measures.

Picture 2: Large-scale cultivation of biofuel crops in the Czech Republic. Measured values of solar radiation, surface temperature and air humidity on a harvested field show that incoming solar energy (823W/m$^2$) is transformed mostly into sensible heat (49.5 $^0$C) and dries out the landscape.

In **Germany**, the CAP is reported to be fully integrated and generally well implemented. The frequent change in subsidy allocation methods and procedures by the competent authorities often leads to mistakes in the implementation of the funds. One reason mentioned is the governance structure of Germany which is made up of rather independent federal states that have legislative power, with the central government mostly providing framework policy guidance. Related to the diffuse responsibility and the layered governmental structure is the difficulty to coordinate actions across vertical governmental levels. Several water objectives collide with the interests of agriculture. Agricultural food production conflicts with the desire to reduce the pollution of water bodies since fertilizers are one of the main sources of pollution. Also, water use for agriculture may conflict with water needs in other areas.

## Methodological note

The SIM4NEXUS case studies selected policy documents for their area and created an overview of policy objectives and instruments that are relevant for their research focus. The national case studies analysed how these objectives are related to international multilateral agreements and to European policies. The regional cases investigated the relationship between national and regional policies, the case of the Upper-Rhine basin in German and -France looked at transboundary policies. All the cases also analysed horizontal coherence between policies for various sectors, analysing policy documents and consulting stakeholders to learn about coherence issues in practice.

This policy brief includes the main findings of the project, so far. Further details can be found in several project reports, including '**Water-Land-Energy-Food-Climate Nexus: Policies and Policy Coherence at European and International Scale**'[6] and '**Nexus-relevant policies in the transboundary, national and regional case studies-report**'[7] and the corresponding background report[8]

*Policy coherence of the EU common agricultural policy within the NEXUS between water, energy, land, food and climate depends on policy implementation, February 2019. Author: Maria Witmer, PBL Netherlands Environmental Assessment Agency. Contact: Maria.Witmer@pbl.nl. Edited by PBL and Fresh Thoughts Consulting GmbH.*

[6] https://www.sim4nexus.eu/page.php?wert=Deliverables#collapse107
[7] https://www.sim4nexus.eu/page.php?wert=Deliverables#collapse169
[8] https://www.sim4nexus.eu/page.php?wert=Deliverables#collapse192

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