POLICY BRIEF 1

COHERENCE IN EU POLICY ON WATER, LAND, ENERGY, FOOD AND CLIMATE

Introduction

WLEFC nexus: numerous interactions. Water, land, energy, food and climate are interconnected in many ways, comprising a complex system, the 'WLEFC nexus'. Any given policy in one of the sectors of this nexus may have unintended positive or negative consequences for policies in one or more other sectors. Understanding such consequences is important for policy effectiveness. Policy coherence refers to the systematic effort to reduce conflict and promote synergy between various policies. The coherence between EU policies along the WLEFC nexus was analysed.

Results

EU WLEFC policies: predominantly coherent. *On paper*, EU policies along the WLEFC nexus are largely coherent. However, problems may arise when specific objectives and measures are articulated and implemented.

Biofuel, hydro-energy, agriculture: negative interactions. Objectives to 'increase biofuel production', 'increase hydroelectricity generation' and 'improve the competitiveness of the agricultural sector' may conflict with several other EU policy objectives along the WLEFC nexus, depending on how these objectives are interpreted and achieved. These potentially conflicting issues are only partly addressed in EU policies.

Attention is needed to reduce negative effects on water caused by the production of renewables. The aim of EU policy on renewables is to phase out the use of food and feed crops for energy generation. However, the contribution of these crops to the production of renewable energy will still be substantial in the years to come. In the current EU Directive proposal on promoting the use of energy from renewable sources, effects on land are addressed more strictly than effects on water. Nevertheless, expansion and intensification of energy crops may affect water quality and quantity. The large-scale cultivation of maize and rape in the Czech Republic, for example, has changed the regional hydrology, leading to local weather extremes, such as heatwaves, droughts and local floods (Pokorny et al., 2010). For energy crops grown outside the European Union, the Directive proposal addresses effects on water through a voluntary reporting scheme in the supply chain and not by legal criteria, leaving private actors responsible for the protection of water resources in the production areas.

Main findings

- The water, land, energy, food and climate (WLEFC) nexus is influenced by numerous policies, also by those that address sectors outside the nexus.
- There is more synergy than incoherence between EU policy objectives for WLEFC sectors.
- Several EU policy objectives for WLEFC sectors conflict with other objectives. Progress in achieving these objectives could come at the expense of others.
- In the current EU Directive proposal on promoting the use of energy from renewable sources, trade-offs on water are not as well addressed as those related to land.

The nexus is context-specific. The WLEFC nexus is part of a broader socio-economic and ecological system and has no natural boundaries. Policies on sectors not included in the WLEFC nexus may influence the nexus, either reinforcing or counteracting WLEFC objectives. Examples are policies on the economy, investment and financing, innovation and research, ecosystems and biodiversity, regions, development, risks and trade. These policies should consider any relationship or connection with WLEFC sectors, as there may be a mutual impact.

Method used

Analysis of 66 EU policy documents. The coherence between EU policy objectives for water, land, energy, food and climate was investigated, using the scoring scale developed by Nilsson et al. (2016). The policy documents were summarised to form a database of policy goals, objectives and means. In addition, references to other policy domains in the documents were listed. For more details, see the full report 'Water-land-energy-food-climate nexus: policies and policy coherence at European and international scales' by Munaretto and Witmer (2017).

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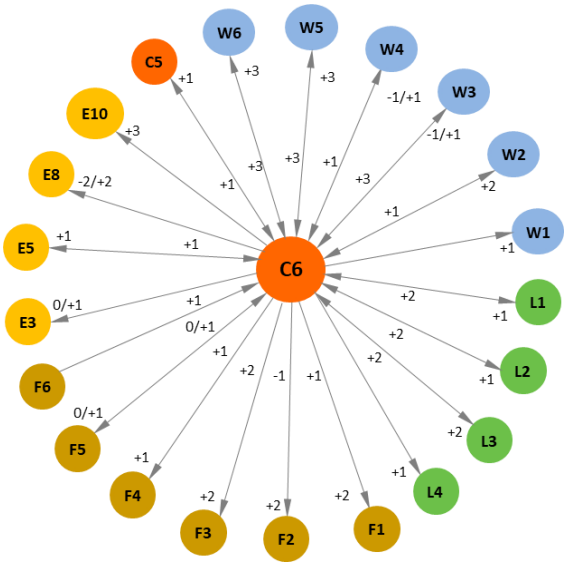
Climate adaptation in coherence with most other WLEFC objectives

There are many synergies between climate adaptation and other WLEFC objectives. Improving soil quality and forest conservation are adaptation measures *per se*. Promoting adaptation in key vulnerable EU sectors and Member States enables and reinforces environmental objectives, such as good water quality and sufficient water quantity for all uses. Extending forested areas for adaptation purposes creates opportunities to harvest biomass and mitigate greenhouse gas emissions. Climate adaptation is also inextricably linked to energy security; for example, by ensuring sufficient water for cooling or protection of infrastructure against flooding. Adaptation reinforces the achievement of objectives in the agricultural sector, including support for farm incomes and competitiveness, and enables rural development. Finally, provided that greening and cross-compliance measures are effectively enforced, the pursuit of objectives in the agricultural sector and rural development may enable climate adaptation.

Figure 1. Direct interactions between climate adaptation and other WLEFC objectives. Numbers indicate the type of interaction and intensity level: **-3** Cancelling; **-2** Counteracting; **-1** Constraining; **0** Neutral; **+1** Enabling; **+2** Reinforcing; **+3** Indivisible.



Climate adaptation may cause a rebound effect. By implementing adaptation measures against drought, more water becomes available during dry periods and more hydropower can be produced. Depending on the context, this may discourage water efficiency improvements and reduction in water consumption. It may also increase energy use in water exploitation and management.

Figure 2. EU WLEFC objectives interacting with those of climate adaptation

EU WATER POLICY OBJECTIVES	
W1	Achieve good water quality status
W2	Ensure sufficient supply of good quality surface water and groundwater for people's needs, the economy and the environment
W3	Increase water efficiency
W4	Reduce water consumption
W5	Assess and manage flood risk and mitigate flood effects
W6	Address and mitigate water scarcity and drought
EU LAND USE POLICY OBJECTIVES	
L1	Restoring degraded soils to a level of functionality consistent with at least current and intended use
L2	Prevent soil degradation
L3	Maintain and enhance forest cover
L4	Prevent indirect land use change from nature to productive use
EU ENERGY POLICY OBJECTIVES	
E3	Increase production of energy from biomass
E5	Increase hydroelectricity generation
E8	Reduce energy consumption
E10	Achieve energy supply security
EU FOOD AND AGRICULTURE POLICY OBJECTIVES	
F1	Contribute to farm incomes (if farmers respect rules on environment, land management, soil protection, water management, food safety, animal health and welfare - 'cross-compliance' and 'greening')
F2	Improve competitiveness of agricultural sector (including sector-specific support and international trade issues)
F3	Ensure provision of environmental public goods in the agriculture sector
F4	Support rural areas economy (employment, social fabric, local markets, diverse farming systems)
F5	Promote resource efficiency in the agriculture, food and forestry sectors
F6	Reduce and prevent food waste
EU CLIMATE POLICY OBJECTIVES	
C5	Incentivize more climate-friendly land use
C6	Promote adaptation in key vulnerable EU sectors and in MSs

Reference

Nilsson M., D. Griggs and M. Visbeck (2016). Map the interactions between Sustainable Development Goals. *Nature* 534: 320 – 322.

Pokorny J., Brom J., Cermak J., and P. Hesslerova (2010). Solar energy dissipation and temperature control by water and plants. *Int. J. Water* 5(4): 311-336.

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