

Danish Legislation's Requirements for Biomass in Agriculture



Contents

Background	3
Methodology	4
Benchmarking of the agricultural practices of harvesting from crop rotation or pruning in Spanish orchards against the DK Biomass legislation	5
Criteria	5

Background

According to the Danish Biomass Legislation¹ biomass with non-forest origin (reference definition published by the Danish Energy Agency¹) delivered to Danish Energy companies from 1 January 2022 shall meet specific requirements related to replanting and nature protection.

The requirements apply to biomass originating from inside and outside Denmark.

This report presents the background, methodology, criteria, and conclusions from an assessment of the current legal framework and operational practices for biomass production from residual wood from agricultural land sourced from harvesting activities in crop rotation and pruning. And analyses whether they comply fully or partially with the mentioned Danish Legislation¹. The primary purpose of the analysis is to:

- 1) evaluate to what extent existing legislation and practices for residual wood from agricultural land sourced from harvesting activities in crop rotation and pruning fully or partly meet the Danish Legislation for non-forest biomass production.
- 2) identify potential gaps and, if gaps are identified, propose mitigation actions that producers and/or buyers of biomass could implement to close identified gaps.

The secondary aim of the report is to identify the type of evidence buyers of agriculture biomass from Spain should request from their suppliers to properly verify origin and biomass type in accordance with the mentioned Danish Legislation¹

The geographic scope of this analysis covers only Spain.

In this report the term 'DK Biomass Legislation' refers *Bekendtgørelse om Håndbog om opfyldelse af bæredygtighedskrav og krav til besparelse af drivhusgasemissioner for biomassebrændsler til energiformål (HB 2021)*

¹ Energistyrelsen, Overblik over biomasse til afbrænding eller biogasproduktion, Version 28. januar 2022

Methodology

The analysis covers the following steps:

- 1) Review of applicable regional legislation and documentation with the aim to:
 - a. Evaluate whether the definition of agricultural biomass sourced from orchard woody residues matches the Danish biomass definition, “Residual wood from agricultural land”.
 - b. Evaluate whether current requirements and practices for harvesting agricultural woody crops fully or partially meet the Danish requirements.
 - c. Also, evaluate whether current requirements and practices for nature protection on agricultural lands fully or partially meet the Danish legislation.
- 2) Interview with relevant stakeholders, partly by telephone and partly in connection with field visits
- 3) Evaluate the enforcement of legislation, management practices, and traceability of biomass from felling, thinning, clearing, or pruning of agricultural areas in connection with field visits to projects in Spain.

This report outlines:

- a. To what extent do regional legislation and practices for harvesting from crop rotation or pruning in agricultural areas (orchards) meet the Danish requirements for non-forest biomass?
- b. Possibilities for maintaining traceability for biomass supplies to Denmark.
- c. In which areas, if any, are there gaps in relation to the Danish requirements?
- d. Recommendations for risk mitigation if there are gaps?

Benchmarking of the agricultural practices of harvesting from crop rotation or pruning in Spanish orchards against the DK Biomass legislation

Definition: According to the field observations and stakeholder consultations, woody biomass sourced from crop rotations and pruning in orchards fully covers the definition of residual wood from agricultural land in the current Danish legislation.

Note: The Danish legislation holds stronger requirements on non-forest biomass (traceability, nature, and soil protection) than on biomass from parks and infrastructure (traceability only).

Criteria

The Danish legislation has certain criteria to meet in order to run biomass in agriculture. These criteria are as follows:



Criteria	Danish legislation	Applicable for fruit residues biomass	Risk assessment	Analysis	Proposed mitigation measures
4.1.1. Sustainability criteria for agricultural biomass	a) Waste and residues from agricultural land may only be considered if monitoring or management plans have been put in place by operators or national authorities to address the effects on soil quality and soil carbon content.	Requirements references		See analysis in indicator 4.2 about soil	See details in indicator 4.2 about soil
	b) Biomass fuels shall not be produced from raw materials from an area with a high biodiversity value. That is, an area that had one of the following statuses in January 2008 or later: (i) primary forest and other wooded areas, i.e., forest and other wooded areas with native species, where there is no clear visible sign of human activity and where ecological processes are not significantly disrupted (ii) forest and other wooded areas with high biodiversity which are species-rich and not degraded or have been designated by the relevant competent authority as high biodiversity areas, unless it is demonstrated that the production of this raw material has not interfered with these nature conservation purposes (iii) areas: - Natural protection area status has been granted by law, or - For the protection of rare, threatened, or endangered ecosystems or species recognised by international agreements				

	<p>or included in lists drawn up by intergovernmental organisations or the International Union for the Conservation of Nature.</p> <ul style="list-style-type: none"> - Unless it is demonstrated that the production of this raw material has not interfered with these nature conservation purposes. <p>(iv) Grassland with a high biodiversity of more than one hectare that is:</p> <ul style="list-style-type: none"> - Natural grassland that would remain grassland in the absence of human intervention and that maintains the natural species composition and ecological characteristics and processes; or - non-natural, namely grassland that would cease to be grassland in the absence of human intervention and that is species-rich and not degraded and has been identified as being highly biodiverse unless evidence is provided that the harvesting of the raw material is necessary to preserve its status as highly biodiverse grassland. 				
	<p>c) Biomass fuels may not be produced from raw materials obtained from land with high carbon stocks in 2008. I.e., areas which had one of the following statuses in January 2008 but no longer have this status:</p> <p>(i) wetlands, namely land that is covered with or saturated by water permanently or for a significant part of the year.</p> <p>(ii) continuously forested areas, namely land spanning more than one hectare with trees higher than five metres and a</p>				

	<p>canopy cover of more than 30 %, or trees able to reach those thresholds in situ.</p> <p>(iii) land spanning more than one hectare with trees higher than five metres and a canopy cover of between 10 % and 30 %, or trees able to reach those thresholds in situ, unless evidence is provided that the carbon stock of the area before and after conversion is such that, when the methodology laid down in Annexe B to the Handbook is applied, the conditions laid down on greenhouse gas emissions would be fulfilled.</p>				
	<p>d) Biomass fuels shall not be made from raw material obtained from land that was peatland in January 2008, unless evidence is provided that the cultivation and harvesting of that raw material does not involve drainage of previously undrained soil.</p>				
<p>4.2. Meeting soil quality and carbon content requirements in soil</p>	<p>Pursuant to Article 29(2) of the RE Directive, waste and residues derived from agricultural land for energy purposes may only be considered as renewable energy where operators or national authorities have put in place monitoring or management plans to address the impact on soil quality and soil carbon. However, residual wood from agricultural land, such as end-of-life fruit trees, is exempt from this requirement.</p>	<p>Applicable for fruit residues biomass</p>	<p>Specified</p>	<p>The biggest problem facing Spanish soil is desertification. Edaphic erosion is one of the determining factors in the advance of desertification in Spain and constitutes an environmental problem of special relevance in most of the Mediterranean area.</p> <p>According to the Map of Erosive States of the Soil (1987-2001), in which the USLE_USDA methodology is used, the soil formation process reaches a variable rate between 2 and 12 tonnes per hectare per year. However, 24% of the national territory (12,382,984 ha) loses more than 12 tonnes per year per hectare and 12.3% (6,217,830 ha) at a rate greater than 50 tonnes per hectare per year. These six million hectares with serious erosive processes are located mostly within the Mediterranean-continental climate</p>	<p>Very limited options exist for mitigation measures, mostly the exclusion of areas with relevant soil losses. Biomass producers cannot impact agriculture management. The mitigation measures could be focussed on the evaluation of key measures performed by the agriculture management on the farm: use of vegetal cover to prevent</p>

				hydrographic basins, mainly in the South, Guadalquivir, Ebro, Tajo and Júcar basins. The annual loss of soil in Spain is valued at more than 1,200 million tonnes. 27% of these losses occur in forest areas (334 million tonnes), with the rest corresponding to agriculture (887 million tonnes). The consulted bibliography and stakeholders confirmed that actual agricultural management practices do not improve or maintain soil quality, and therefore the risk is considered specified. Key aspects of soil management that can be considered to define or evaluate mitigation measure criteria are: The existence of plant cover, machinery movements, the design of plantations according to the topography of the land, mechanisation, soil tillage, and existence of soil cracks.	erosion and soil compaction, maintaining soil structure, appropriate use of machinery, keeping stumps in the ground, leaving a certain amount of chips on the ground, etc. and deciding a threshold to consider the risk mitigation.
4.3 Meeting the requirements for biodiversity and the protection of high carbon stocks	It is a requirement that solid and gaseous biomass fuels produced from biomass from agricultural land must not be produced from biomass from areas with high biodiversity or areas with high carbon stocks. This applies to both primary products, as well as waste and residues from agricultural land. In some cases, biomass may be used if it is shown that production and/or harvesting do not conflict with the nature conservation objective in the area.	Yes			

	<p>For biodiversity:</p> <p>Evidence that in 2008 or later, the agricultural land did not have one or more of the statuses mentioned in 4.1.1. point b (i – iv) (however, see points 1 and 2 below).</p> <p>1) Where agricultural land has/has had the statuses referred to in points (ii) or (iii)(2) and biomass is used from here, evidence shall be if production on the land has not interfered with the purpose of the nature conservation of the area.</p> <p>2) Where agricultural land has/has had the status referred to in point (iv)(2) and biomass is used from here, evidence shall be provided that harvesting of biomass on the land is necessary to maintain the status of the area.</p>	Yes	Specified	<p>Spain is the European country with the highest levels of biodiversity in its agricultural environments (Kleijn et al., 2006; Emmerson et al., 2016). Furthermore, of the total terrestrial species and habitats included in the Birds and Habitats Directives and present in Spain, 511 species (40%) and 111 habitats (48%) are linked to agricultural landscapes; 38% of these species and 23% of these habitats are of priority conservation concern under these Directives (Díaz et al., 2006). The mandatory protection of these species and habitats stems from the designation of Natura 2000 Network sites, which cover 27.4% of Spain’s land area. Given that most Natura 2000 sites are agricultural land, and their natural value depends on agricultural use, agricultural practices are a key instrument for ensuring the conservation of biodiversity within the Natura 2000 network. Special attention should be paid to key ecosystem services associated with biodiversity, such as pollination, biological pest control, carbon storage, cultural services, or reservoirs of genetic resources. (Diaz M. et al, 2021). Eight main agricultural systems have been identified in Spain based on their biological and agricultural characteristics 1) Mediterranean arable crops; 2) agro-silvo-pastoral systems (dehesas); 3) olive groves; 4) vineyards; 5) mixed Euro-Siberian systems; 6) extensive and transhumant grazing systems; 7) fruit orchards; and 8) rice fields. In this risk assessment we will pay attention to 7) fruit orchards. Evaluation by type of habitats is already available under https://nature-art17.eionet.europa.eu/article17/. Each habitat evaluation includes the description of the main threats and pressures for some of</p>	<p>Very limited options for mitigation measures mostly exclusion of sourcing from zones identified as HCV (e.g. NATURA 2000). In cases where the material would be coming from such areas, the BP could also consult with the authorities to assure that the particular farm where the material is sourced is following the BMP defined by PAC.</p> <p>BP cannot impact agriculture management. The mitigation measure could be focussed on the evaluation of key measures performed by the agriculture management in the farm: polyculture, species to improve pollinizers habitats, natural vegetation to be used as wildlife refuges, etc. and decide a threshold to consider the risk mitigation.</p>
--	---	-----	-----------	---	---

			<p>the Natura 200 areas codes A02.02 (agricultural intensification), A02.02 (crop change) or A08 (fertilizers) are identified as threats and pressures. The threats and pressures of agricultural activities are widely described in the literature and one of the main motivations for the new CAP and to improve this tool so that it can meet the objectives and commitments regarding environmental impacts that previous versions of the CAP (Community Agriculture Policy) did not reach. Agricultural intensification is a major cause for biodiversity loss. In recent decades we are witnessing a significant decline in bird populations linked to rural areas, mainly due to the intensification of conventional agriculture. The use of pesticides, the elimination of boundaries and banks and the implication of the agricultural landscape are the main causes also applicable to the fruit orchards. Community Agricultural Policy establishes measures for Spain related to "conditionality", eco-schemes and AECM in a way that mutually enhances their effects, taking into account landscape-scale constraints (Díaz & Concepción, 2016). For instance, conditionality (under PAC framework) would ensure minimum levels of landscape complexity by maintaining current non-productive landscape elements, eco-schemes to restore this complexity at landscape and farm scales, and AECM to design landscape configurations and management strategies for endangered species. Several eco-schemes should include elements already addressed by the enhanced conditionality and should aim at promoting the restoration of these elements at landscape scales when insufficient, improving semi-</p>	<p>Not all but some of the good agricultural practices can be evaluated on-site by visual inspection, for example: i) minimum levels of landscape complexity by maintaining current non-productive landscape elements ii) maintenance of vegetal cover in woody and mixed crops</p>
--	--	--	---	---

				natural elements and habitats to cover up to 10-20% of both farms and landscapes (Concepción & Díaz, 2019; Concepción et al., 2020; BioGEA project, 2020; Garibaldi et al., 2020). Other eco-schemes should be specific to particular systems, such as fallow management in arable crops, maintenance of grass cover in woody and mixed crops, and management of stocking rates in extensive grazing systems and pastures. There is no evidence on the field that the mitigation measures described above are commonly implemented by agricultural practices and therefore the risk is considered specified.	
	<p>– High carbon stocks: Evidence that the biomass is not from an area that had the statuses referred to in 4.1.1. point c (i – iii) in 2008 and where the areas no longer have this status, in the form of</p> <ol style="list-style-type: none"> 1) Evidence of the status of the area in January 2008 2) Evidence of the status of the area at the time of harvesting the biomass concerned. 	Yes	Specified	Changes in status can be evaluated using remote GIS systems and databases. Cadastral information is available, and forests, wetlands, and peatlands are mapped as well. Certain risks could be identified when it comes to highly biodiverse grasslands to orchards. This will need to be explored further and if BP would like to designate low-risk, proper justification would be needed.	Plot screening using remote GIS to ensure feedstock is not sourced from high-carbon stock areas.
	<p>For peatland areas:</p> <ol style="list-style-type: none"> 1) Evidence of whether the area was drained in January 2008 2) Evidence of whether the area was drained at the time of harvesting the biomass concerned. <p>If the area has been drained, it must be further demonstrated that the cultivation and harvesting of the biomass in question is not the cause of the drainage.</p>	Yes	Low	Peatlands areas identified and mapped. Agricultural lands for fruit orchards are not established in peatlands.	

About us

Preferred by Nature (formerly known as NEPCon) is an international non-profit organisation working to support better land management and business practices that benefit people, nature and the climate. We do this through a unique combination of sustainability certification services, projects supporting awareness raising, and capacity building.

For almost 30 years, we have worked to develop practical solutions to drive positive impacts in production landscapes and supply chains in 100+ countries. We focus on land use, primarily through forest, agriculture and climate impact commodities, and related sectors such as tourism and conservation. Learn more at www.preferredbynature.org

