

# **ENERGY BARGE**

**Building a Green Energy and Logistics Belt**

**Project Code: DTP1-175-3.2**

## **D.3.1.3**

### **National Sustainability Framework Conditions for Bioenergy Feedstock Production**

*20<sup>th</sup> December, 2017*

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## Executive Summary

In this document, the ENERGY BARGE project focusses on the national and transnational sustainability framework conditions regulating the utilization of bioenergy and its biobased feedstock with a focus on the Danube-adjacent countries.

In order for biomass to contribute to increased energy security and cuts in greenhouse gas emissions, the feedstock itself and the products must be produced in a sustainable way. Starting from the EU-wide accepted principles of sustainability and the agreed-upon guidelines within which biomass for energetic (or other non-food) purposes shall always be preceded by the food and feed purposes of biomass, this document thus aims at providing an overview of the project's partner countries' national sustainability frameworks for biomass and bioenergy products. First, the document gives a brief overview of the present sustainability framework for biomass on EU level. The main part of this document is made up by a set of 68 national schemes, having a direct or indirect impact on biomass and bioenergy sustainability. By means of a standardized template, partners were asked to compile an inventory of national sustainability schemes, both legally binding and voluntary in nature. For each scheme, a number of characteristics were asked to be given, referring to sustainability aspects, supply chain and geographical coverage, the extent to which the scheme was theoretically designed to impact the market, as well as the extent to which the scheme also regulates how the transport of the respective biomass or bioenergy carrier/product itself shall be facilitated in a sustainable manner. Like this, conclusions and recommendations on how ENERGY BARGE can contribute to a more sustainable transport of biomass, for example via inland waterway transport, where applicable, can be drawn. Additionally, each country section is supplemented by a qualitative and textbased assessment of the overall effectiveness of the national sustainability frameworks and the conditions they form for a functioning bioenergy market, followed by a set of recommendations given from each country expert's point of view.

In an analyzing section, 68 sustainability schemes as well as seven assessments of the overall frameworks' effectiveness are compared. Some additional schemes only indirectly impact the bioenergy market, e.g. environmental conservation acts. Voluntary private sector certification schemes are in place in a number of countries, but not overly extensively used. Most of these schemes primarily focus on environmental sustainability, followed by economic and societal sustainability. In terms of regulatory effectiveness and legislative deepness as well as good coverage of the entire bioenergy supply chain, country framework conditions differ considerably. On a transnational level, there is a partly diverging understanding of sustainability with respect to bioenergy (using bioenergy per se equals sustainability vs. sustainability of all biomass feedstock needs to be ensured to maintain bioenergy as sustainable source of energy). The overall assessment also indicates that the geographical coverage of the sustainability regulations for biomass is weak in a sense that the schemes mainly only apply to domestic biomass and bioenergy products. In order to enable a non-distorted, harmonized and overly sustainable bioenergy market in the Danube region but also in the EU, sustainability standards for all imported biomass is demanded.

## **I. About the ENERGY BARGE project**

The Danube region offers a great potential for green energy in the form of biomass. The main objective of ENERGY BARGE is to exploit this potential in a sustainable way, considering the Renewable Energy Directive 2009/28/EC, thereby increasing energy security and efficiency in the Danube countries. The project brings together key actors along the entire value chain, biomass companies and Danube ports as well as relevant public authorities and policy stakeholders. The project maps value chains and facilitates the market uptake of biomass, supports better connected transport systems for green logistics and provides practical solutions and policy guidelines. The Agency for Renewable Resources (FNR) coordinates the ENERGY BARGE project consortium with fourteen partners from Austria, Bulgaria, Croatia, Germany, Hungary, Slovakia and Romania.

### Project coordinator

Agency for Renewable Resources /

Fachagentur Nachhaltende Rohstoffe e.V.	FNR	Germany
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### Project partners

BioCampus Straubing GmbH	BCG	Germany
Deggendorf Institute of Technology	DIT	Germany
Austrian Waterway Company	VIA	Austria
Port of Vienna	PoVi	Austria
Bioenergy2020+ GmbH	BE2020	Austria
International Centre of Applied Research and Sustainable Technology	ICARST	Slovakia
Slovak Shipping and Ports JSC	SPaP	Slovakia
National Agricultural Research and Innovation Center	NARIC	Hungary
MAHART-Freeport Co. Ltd.	MAHART	Hungary
International Centre for Sustainable Development of Energy, Water and Environment Systems	SDEWES Centre	Croatia
Public Institution Port Authority Vukovar	PoVu	Croatia
Technology Center Sofia Ltd.	TCS	Bulgaria
Romanian Association of Biomass and Biogas	ARBIO	Romania
Federation of owners of forests and grasslands in Romania	Nostra Silva	Romania



## II. About this document

This report corresponds to “D.3.1.3. National Sustainability Framework Conditions for Bioenergy Feedstock Production” of ENERGY BARGE. It has been prepared by:

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2.0	2017-12-31	Ann-Kathrin Kaufmann	Final version	finalised



### III. Sustainability framework conditions for bioenergy feedstock production

#### 1. Background

ENERGY BARGE aims at exploiting the Danube macroregion's bioenergy potential to increase energy security and diversification of energy sources by establishing secure, efficient and sustainable bioenergy supply chains along the river. To this end, a holistic view on the bioenergy market and underlying value and supply chains is needed. Given national and regional disparities in theoretical, geographical and market potential for bioenergy, deployment, public support, and also cooperation between private and public actors, it is necessary to identify levers for tapping potential and options for market actor cooperation, business development and market uptake.

A theoretical model designed to increase the market uptake of biobased feedstock for both material and energetic (ideally cascading) use in the Danube region and thus to address the objectives also set out in the EU Strategy for the Danube Region (EUSDR) is a concept called 'Green Energy and Chemistry Belt' (see Figure 1). It was developed by the BioCampus Straubing GmbH (Project Partner 1) and aims at using the Danube River as a natural biomass corridor and sustainable transport axis for biomass. The underlying principle follows the logic of *local harvesting – decentral processing into more transport-worthy states (e.g. oils, pellets, liquids) – central refinement or enduse*, so that added value creation can mainly stay in rural areas along the Danube. This concept forms the basic idea of the ENERGY BARGE project.

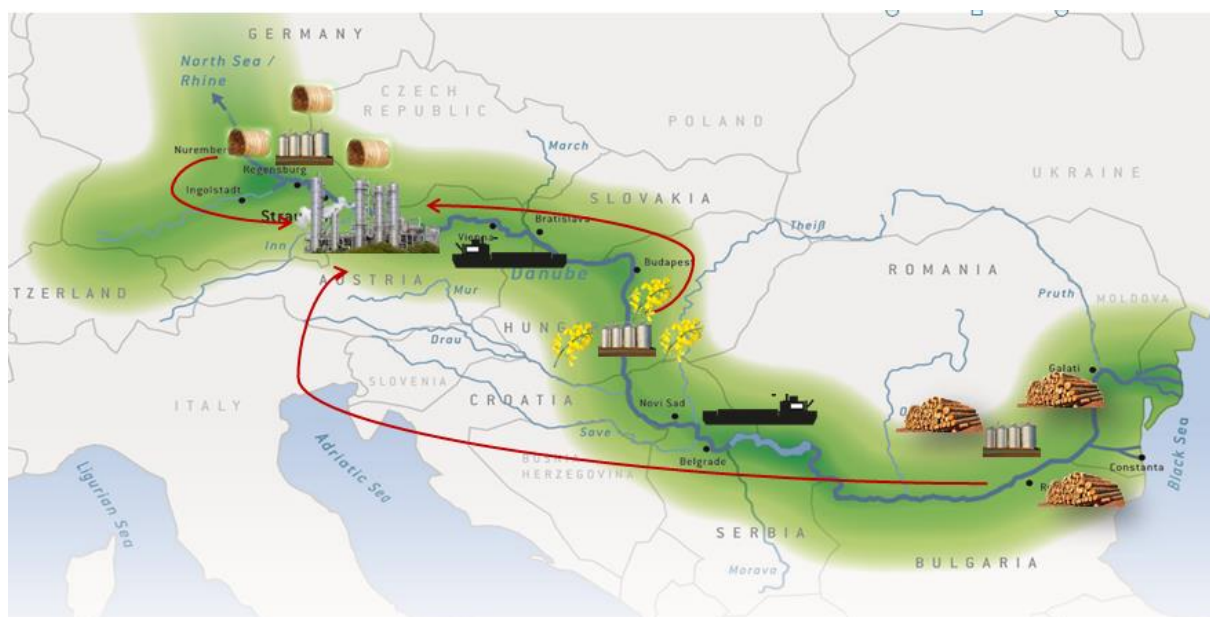


Figure 1: Green Energy and Chemistry Belt (Source: BioCampus Straubing GmbH, own visualization).

In order to reach the targets outlined above, WP3 provides market-oriented mapping of the Danube region's value chains from biomass feedstock production and residues to energy generation from an integrated, transnational perspective, giving regional and transnational guidance for market development along the river (green bioenergy belt) and setting the stage for increased use of Danube logistics in the bioenergy sector. This will be achieved through a transnational market study compendium including biomass flows and sustainability aspects (macro-perspective, Activity 3.1), business landscape mapping, case studies and identification of best practice locations for bioenergy value chain integration (micro-perspective, Activity 3.2).

An overall visualization of the relation of work package 3 and its activities is presented in the figure below:

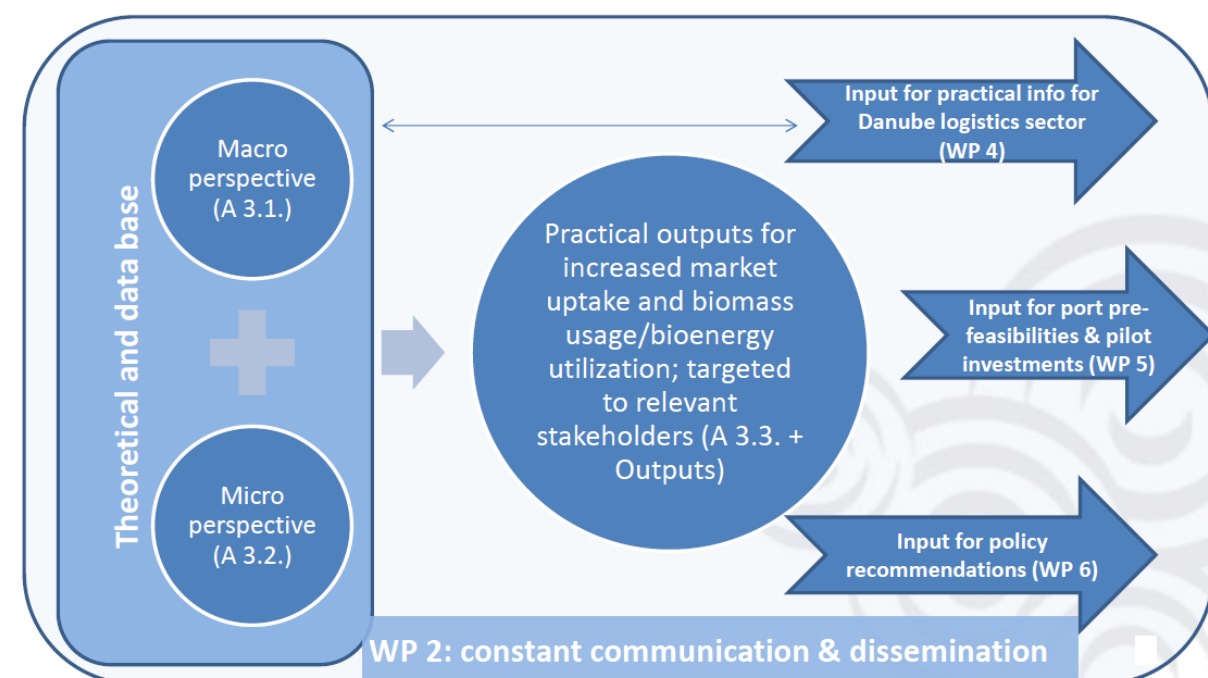


Figure 2: Role of WP 3 in the entire project (own visualization)

## 2. Objective of the analysis of sustainability framework conditions for bioenergy feedstock production

This deliverable “D.3.1.3. Analysis of National Sustainability Framework Conditions for Bioenergy Feedstock Production” is based on the task as described in the latest approved version of the Application Form of the project ENERGY BARGE (Project Code: DTP1-175-3.2).

- *A3.1-Overview of the bioenergy market and value chains situation (lead: BCG)*

Activity 3.1 analyzes the bioenergy market and related value chains’ situation in project partner countries as well as from a transnational perspective, including sustainability aspects. It aims at identifying regional strengths, weaknesses and potential for improved energy supply and security via increased bioenergy usage in the Danube region. It is focusing on the macro-economic dependencies within the partner countries and aims at drawing conclusions on transnational level for the biomass and bioenergy market in the Danube region. Moreover, it mainly serves as a theoretical basis for the other thematic work packages as well as for the Outputs developed in work package 3. A validation of these outputs, mainly Output 3.1, the biomass and bioenergy atlas, will take place during the workshops organized during the expert delegation programme.

Deliverable 3.1.3 (together with D.3.1.1 and D.3.1.2) forms part of the theoretic and data-related input for Output 3.1, the biomass and bioenergy ICT Tool. This means that the results gained from D.3.1.3 will be used to fill the ICT tool with content.

In order for biomass to contribute to increased energy security and cuts in greenhouse gas emissions, the feedstock itself and the products must be produced in a sustainable way. Biomass production involves a chain of activities ranging from the growing of feedstock to final energy conversion, also including aspects of land use and land use change, fertilization, harvesting, and transport. Each step along the supply and value chain can pose different sustainability challenges that need to be managed, potentially impacting e.g. biodiversity, air quality, green house gas emissions due to (indirect) land use change, soil and water quality, and other important ecosystem services. Also, aspects of competing forms of utilization, e.g. ranging around discussions of using biomass suitable for food and feed production (so-called first generation biomass) for industrial or energetic purposes have to be looked at in the context of sustainability and ought to be subject to regulation.

A number of regulations on EU, national but also private, voluntary level (e.g. labels, certificates, ISO norms) aim at ensuring the sustainability along the supply chain, but these can vary and do not apply to all elements at the same time (European Commission Energy, 2017). As a EU Commission consultation on sustainable bioenergy policy after 2020 has indicated concerns of experts that diverging national sustainability frameworks and schemes might result in a distortion in biomass trade on the internal market (PricewaterhouseCoopers, 2017), the aim of a level playing field in sustainability regulation for biomass becomes even more relevant, especially in the context of a transnational project such as ENERGY BARGE. Moreover, as ENERGY BARGE aims at increasing the utilization of biobased energy in order to improve energy security and

environmentally friendly energy supply in the Danube region, the sustainability risks that can potentially accompany such an increase have to be identified and addressed.

The main objective of the deliverable at hand thus is to analyze the national sustainability framework conditions for bioenergy feedstock production and bioenergy production in the project partners' countries and the Danube region as a whole and their impact on the respective bioenergy market. Like this, it shall be possible to identify differences in quality of sustainability regulations between a) feedstock and bioenergy product types, b) countries and c) scope. Also, aspects of sustainability of logistics shall be considered. The final analysis aims at providing input for recommendations safeguarding a level-playing field along the Danube region's biomass and bioenergy value and supply chains and high and equal sustainability standards that are in line with market requirements and allow competition on the market. This is especially valuable as the European Commission will propose a new renewable energy package for the period after 2020 with a stronger focus on sustainability criteria also for biomass beyond the biofuels/liquid sector (PricewaterhouseCoopers, 2017), making it possible to have an influence on the policy making process.

### 3. Methodology

The analysis of national sustainability framework conditions for bioenergy feedstock and products is delivered in the form of a report that both covers the national framework conditions on sustainability aspects in the different partner countries as well as a transnational analysis with a focus on the Danube region. In order to achieve the objective outlined above, a data template covering for types of national sustainability regulations was developed and filled out by the ENERGY BARGE project partners. The four types comprise: 'national sustainability schemes on biomass feedstock (solid, liquid)', 'national sustainability schemes on bioenergy products (solid, liquid)', 'public and private certification schemes, labels, standardization norms etc. for sustainability of biomass and bioenergy' and 'Other' (in case an existing or planned scheme does not fit under the first three categories). This way, it becomes possible to cover both legislative as well as voluntary public and private schemes on national level.

The report comprises an EU biomass sustainability framework chapter, providing an overview of what kinds of regulations are in place on EU level and have an influence on national policy making, seven country chapters of the ENERGY BARGE countries Austria, Bulgaria, Croatia, Germany, Hungary, Romania and Slovakia, as well as a comparative and analyzing section.

#### 3.1 Underlying concepts

According to the most commonly cited definition, the United Nations' so-called Brundtland report *Our Common Future* from 1987, sustainable development is defined as development that meets the needs of the present without compromising the ability of future generations to meet their own needs (United Nations, 1987). This includes that the human development on the planet is based on needs as well as on limitations and that these need to be safeguarded and respected along at least three pillars that form the basis for almost all policy actions taken in order to ensure sustainability: people (society), planet (environment), and prosperity (economic wellbeing).

Therefore, a holistic concept of sustainability always entails societal, environmental and economic elements. These are also the elements underlying this document and the entire project's definition of sustainability. In the context of biomass and bioenergy, the developments in these sectors can have impacts on aspects of society, environment and the economy – locally, regionally, nationally, EU-wide and globally. Therefore, comprehensive and effective regulative schemes and voluntary initiatives shall reduce all risks along these axes. In order to achieve biomass and bioenergy sustainability, policy goals underlying current EU legislation are (PricewaterhouseCoopers, 2017):

- Insurance that bioenergy use in the EU adds to climate change mitigation
- Avoidance of direct and indirect land use change
- Minimization of biodiversity impacts
- Insurance of efficient biomass conversion
- Avoidance of any barriers to trade / distortion of internal market

These goals also apply to the Danube Region in particular and shall contribute to encouraging a sustainable use of biomass as also claimed in the Danube Region Biomass Action Plan and build the corner stone of EUSDR's Priority Area 2 to encourage more sustainable energy when it comes to biomass use. Examples (not exhaustive) of drivers and risks to the sustainable deployment of biomass for bioenergy purposes that might be addressed by national, regional or local regulations / sustainability schemes and/or private or public-private initiatives are presented in the figure below. This visualization clearly shows that especially an increase of biomass demand which is a logical consequence of a higher share of bioenergy has potential sustainability risks that need to be addressed:

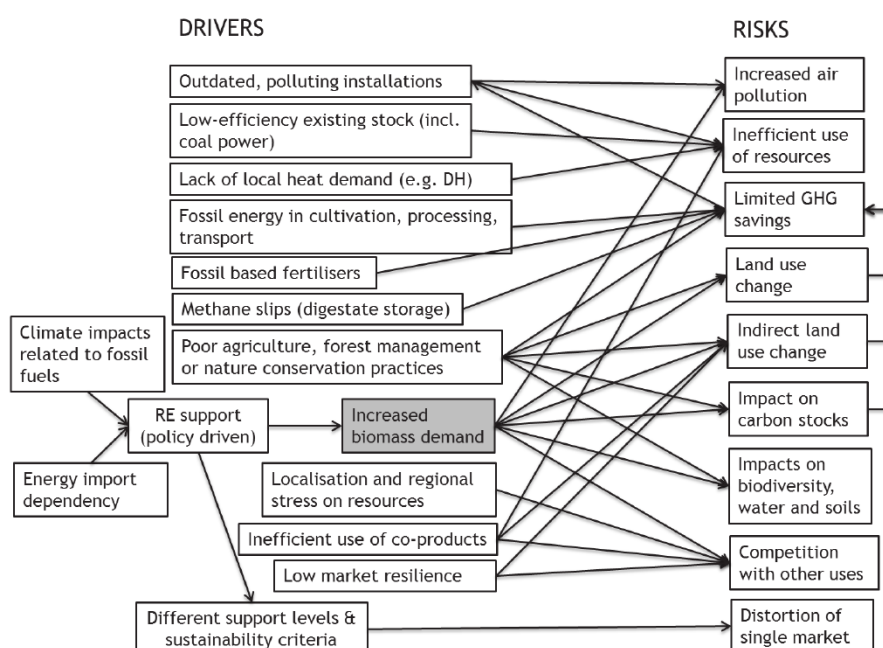


Figure 3: Sustainability risks and their respective drivers (PricewaterhouseCoopers, 2017).



### 3.2 Analysis of national sustainability framework conditions

In order to ensure a coherent, homogeneous analysis of all ENERGY BARGE partner countries' national sustainability framework conditions, clear indications on how to proceed the compilation of the report as well as a template with criteria on how to describe the respective schemes were provided to the partners.

For Deliverable 3.1.3., partners were asked to consider only national public regulations and private or public-private initiatives that directly address at least one of the three pillars of sustainability as mentioned above in terms of biomass cultivation, harvest, transport, processing and/or deployment of bioenergy (supply chain) shall be considered and analyzed. Partners were specifically asked not to cover the relevant EU directives, but rather the national regulations that have been drawn to put the directives into national law.

The most recent national documents and legislation (both in force and in planning/revision) that constitute the national sustainability framework conditions were asked to be covered. All schemes should be categorized in one of the following categories according to the partner's discretion and judgement:

- National sustainability schemes on biomass feedstock (solid, liquid)
- National sustainability schemes on bioenergy products (solid, liquid)
- Public and private certification schemes, labels, standardization norms etc. for sustainability of biomass and bioenergy
- Other (in case an existing or planned scheme does not fit under the above)

The following template, Table 1, was provided to the partners, asking them to fill in one table per scheme. Please give the data sources at the bottom of each table. In case a criterion did not prove applicable, partners were asked to indicate this with 'n/a'.

The template's structure aims at covering different aspects of regulatory schemes on biomass and bioenergy sustainability in order to arrive at an overview that allows drawing analytical conclusions. Besides a neutral, fact-based set of characterizing criteria (title, date of entering into force, brief description, etc.), the partners were asked to assess the effectiveness of the scheme in terms of limitations and shortcomings both in the template for each scheme analyzed, as well as the entirety of the national framework conditions in an extra template (see Table 2).

Based on the sustainability definition laid out above, the partners were additionally asked to assess the identified schemes based on its impact on the three sustainability pillars, considering that not all schemes aim at all three pillars at once. Paying attention to the hypothesis stated in the EU Commission's report (PricewaterhouseCoopers, 2017), which states that different sustainability standards and requirements for biomass in different member states could create market distortion, the partners were asked to give an indication of whether the respective scheme has potential to stimulate or inhibit market uptake of biomass and/or bioenergy as a result of the scheme.

In order to better tailor analysis and recommendations towards the target groups of market actors (how to work in line with and benefit from stringent sustainability regulations) and policy

makers/public authorities (according to the project's specific objective of providing practical solutions), partners were also asked to assess the respective body in charge of enforcing the schemes as well as the stakeholders and supply chain elements covered by the scheme. As a means to also pay attention to the overall ENERGY BARGE project's specific objective 2 (sustainable and secure distribution of biomass and bioenergy feedstock along the river), partners were asked to assess to what extent the scheme targets different forms of biomass transport with regard to these transport forms' impact on sustainability, climate change and environmental friendliness.

**Table 1: Template criteria for national sustainability schemes on biomass and bioenergy**

<b>Title of the scheme in English:</b>	
<b>Title of the scheme in original language:</b>	
<b>Current status (in force, planned, abandoned):</b>	
<b>Date of entering into force:</b>	
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	
<b>Sustainability objective mainly addressed:</b>	
<b>Impact on environmental sustainability aspects:</b>	
<b>Impact on economic sustainability aspects:</b>	
<b>Impact on societal sustainability aspects:</b>	
<b>Authority in charge of execution and / or certification:</b>	
<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	
<b>Level of direct addressing of transport modes:</b>	
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	
<b>Limitations and shortcomings:</b>	
<b>Any other comments:</b>	
<b>Data source (Link, legal text, date, etc.)</b>	

Each national chapter also comprises of an assessment of the overall national regulatory level in terms of comprehensiveness/deepness, effectiveness and impact of identified schemes on the market uptake of biomass and bioenergy in the respective country. Here, a threefold qualitative scale ranging from low over medium to high/strict level was applied (see Table 2). Moreover, partners were asked to formulate a set of recommendations with regard to harmonizing both bioenergy sustainability and a healthy bioenergy market on national, Danube-wide and EU levels, also indicating, where possible the target group the recommendation addresses.

**Table 2: Assessment template for biomass and bioenergy sustainability framework**



<b>Biomass and bioenergy sustainability framework in „Country”: indicators for assessment</b>	<b>High / strict</b>	<b>Medium</b>	<b>Low</b>
Comprehensiveness of regulation regarding entire supply chain and possible bioenergy products			
Comprehensiveness of regulation regarding target groups			
Comprehensiveness of regulation regarding geographical scope (domestic & imported biomass and bioenergy products)			
Level of enforcement of existing EU directives			
Overall regulatory deepness			
Effectiveness in terms of binding character			
Effectiveness regarding environmental sustainability			
Effectiveness regarding societal sustainability			
Effectiveness regarding economic sustainability			
Level of stimulating impact on market uptake/demand			
Level of inhibiting impact on market uptake / demand			

### 3.3 Report structure

As a result of the above, the underlying report is structured as followed:

- 1) Importance of sustainability aspects and criteria in the biomass and bioenergy sector
- 2) Sustainability framework conditions for biomass and bioenergy on EU level
- 3) National chapters, including: national sustainability schemes for biomass and bioenergy including assessment of overall effectiveness of the framework conditions
- 4) Analyzing summary and transnational recommendations

### 3.4 Data and sources

In order to obtain a comprehensive set of schemes for each country, partners were asked to use their national expertise, network and legislative documents to complete the templates. Moreover, all partners were asked to refer to official and recent reports and documents published by or on behalf of the EU Commission or its respective directorates and institutes. The most relevant one being:

- Report “Sustainable and optimal use of biomass for energy in the EU beyond 2020 (PricewaterhouseCoopers on behalf of EC):  
[https://ec.europa.eu/energy/sites/ener/files/documents/biosustain\\_report\\_final.pdf](https://ec.europa.eu/energy/sites/ener/files/documents/biosustain_report_final.pdf)
- Overview of EU Commission, DG Energy, on biomass sustainability:  
<http://ec.europa.eu/energy/en/topics/renewable-energy/biomass>
- Report “Danube Region Biomass Action Plan” within the Danube Region Strategy Energy Area (ÉMI Non-Profit Limited Liability Company for Quality Control and Innovation in Building on behalf of Danube Region Strategy):  
<http://groupspaces.com/Energy2/pages/publications>



#### 4. Biomass and bioenergy sustainability policy in the EU

As it has become apparent in the previous sections, and as is true for most aspects of national and transnational affairs within the boundaries of the European Union, also the biomass and bioenergy supply chains and markets are subject to EU level regimes, mainly under the umbrella of agricultural, forestry and bioenergy-related frameworks and directives. Therefore, the EU level forms the regulative boundaries within which the member states and their bodies ought to act on national and sometimes regional or even local level while adhering to the principle of subsidiarity.

In recent years, as the utilization of biomass for various non-food purposes has increased, aspects of sustainability throughout the entire supply and value chains have gained in importance (PricewaterhouseCoopers, 2017). This development also onto the legislative level, results in a number of central documents with relevance for all member states. Especially the renewable energy policy ‘center piece’, the Renewable Energy Directive (RED, 2009/28/EC) regulating the utilization of renewable energy sources including biomass in the EU until 2020/2030 is currently subject to revisions in order to instill new and comprehensive biomass sustainability criteria. The recently published report „Sustainable and optimal use of biomass for energy in the EU beyond 2020” researched on behalf of the European Commission aims at contributing to this procedure by suggesting a “level playing” field regarding feedstock types, deployment areas, markets, actors and sustainability targets (PricewaterhouseCoopers, 2017).

Until today, only the use of biofuels (used in transport) and bioliquids (used for electricity and heating) is regulated via a recent RED amendment in a way that guarantees real carbon savings and protects biodiversity (directive: 2015/1513/EC). Under this scheme, only biofuels and bioliquids that comply with the criteria, e.g. do not contribute to direct or indirect land use change, do not harm biodiversity and require to contribute to green house gas savings by 50 % in 2017 and 60 % from 2018 onwards, respectively, can receive government support or count towards national renewable energy targets (European Commission, 2017b). No such explicit and directly addressing regime exists for energetic utilization of solid biomass types and their effects on ecosystem services such as biodiversity or soil quality or aspects of direct or indirect land use change. The decision not to bindingly regulate sustainability criteria for solid biomass used in heating, cooling and electricity generation was based on the rationale that most member states already implemented such regulations on national level, resulting in mere recommendations (PricewaterhouseCoopers, 2017). As can be seen in the subsequent chapter of this document, this approach is however currently not resulting in a level playing field for the bioenergy market and also is not overly in favor of a coherent sustainability framework.

Just recently, as the Commission report mentioned above states, “[The Commission] in its Energy Union Framework Strategy, announced [in 2015] that it would propose a new Renewable Energy Package for the post-2020 period, including a new policy for sustainable biomass and biofuels. The Commission also stated in its 2015 Communication on the Circular Economy that it will ‘ensure coherence and synergies with the circular economy when examining the sustainability of bioenergy under the Energy Union’” (PricewaterhouseCoopers, 2017, p. 16). In this context, it becomes apparent that a new regulatory revising circle has already started on EU level concerning

biomass and bioenergy sustainability standards. In addition, the report states that intra-EU market trade as well as non-EU biomass imports need to be governed by a harmonized regime in order to avoid market distortions and to safeguard international sustainability standards, especially on environmental and societal scale. Also from a Danube Transnational Programme point of view, the explicit mentioning of the circular and biobased economy in this context is noteworthy.

A number of other EU-level schemes (directives and regulations) indirectly affect the sustainability of a number of biomass types relevant for bioenergy production in a way that they concern relevant areas such as forestry, agriculture, habitats protection, environmental conservation, etc. and thus form an overall framework. Among the most important ones with relevance for national legislation are:

- Several regulations and directives under the Common Agricultural Policy
- EU habitats directive (92/43/EC)
- Protected area regulations, especially NATURA 2000
- EU biodiversity strategy 2020
- EU timber regulation (995/2010/EC)
- Commission Regulation (EU) No. 1307/2014 on defining the criteria and geographic ranges of highly biodiverse grassland

It has to be stressed that this deliverable is not aiming at assessing the quality of the regulations and frameworks in place on EU level to govern biomass and bioenergy sustainability.

## 5. National sustainability framework analysis

With the aim of gaining an overview of the regulatory conditions of how sustainability criteria are being enforced along biomass supply and value chains in the Danube region, ENERGY BARGE partners put together the sustainability frameworks in place in their respective countries according to the criteria described above. In addition, an assessment of the overall regulatory frameworks regarding their effectiveness was executed.

The results are listed below, appearing in alphabetical order.

### 5.1 Austria

#### **List of existing sustainability framework conditions (hyperlinks):**

- [Table 3: Forestry Act 1975](#)
- [ÖPUL 2015 - the Agri-environmental Programme until 2020](#)
- [Regulation on agricultural raw materials for biofuels and bioliquids](#)
- [Eco-label Austria 38](#)
- [ÖNORM M 9466 & ÖNORM EN 303-5](#)
- [Combustion plant ordinance](#)
- [Immission Control Act – Air](#)
- [Austrian Forest Dialogue](#)

- Waste Management Act 2002

## National sustainability schemes on biomass feedstock (solid, liquid)

Table 3: Forestry Act 1975

<b>Title of the scheme in English:</b>	Forestry Act 1975
<b>Title of the scheme in original language:</b>	Forstgesetz 1975
<b>Current status (in force, planned, abandoned):</b>	In force
<b>Date of entering into force:</b>	1975
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	None
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Legally binding
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	Federal Act on forestries. Main aim of the present Federal Act is the conservation of the wood and its soil; to guarantee an adequate treatment of the wood and finally to secure a sustainable development. The text consists of 183 articles divided into 10 Parts as follows: General provisions (I); Forestry planning (II); Conservation of the forest and the sustainability of its functions (III); Protection (IV); Haulage & transport (V); Utilization of forests (VI); Protection function against flooding and avalanches (VII); Personnel (VIII); Forestry research and education (IX); Federal support and funding of forestries (X)
<b>Sustainability objective mainly addressed:</b>	Article 1 "Sustainability": programmatic statement-principle of sustainability is expressed clearly and in a binding manner in many provisions under forest law  E.g. Article 6 ff- „Forest area planning”: foresighted planning of the status of forests in order to ensure forest effects (economic, protective, beneficial and regeneration effects)
<b>Impact on environmental sustainability aspects:</b>	Examples in regard of ecological effects of forests: Article 32a: biotope protection forests Article 13: reforestation through natural regeneration
<b>Impact on economic sustainability aspects:</b>	Examples in regard of economic effects of forests: Article 17: prohibition of clearing Article 80: prohibition of clear cutting in immature high forest stands Article 82: prohibition of large-scale clear cutting in high forests Article 85: felling of 0.5 hectares or more require official approval
<b>Impact on societal sustainability aspects:</b>	Example in regard of social effects of forests: Article 33: right of free access to forests for recreation
<b>Authority in charge of execution and/or certification:</b>	Forestry authorities on national and federal state level
<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	Forest Owners

<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	Biomass cultivation & harvest
<b>Level of direct addressing of transport modes:</b>	Partly, in part V (Haulage & transport)
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Total forest area in Austria (domestic)
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	Stimulating
<b>Limitations and shortcomings:</b>	None
<b>Any other comments:</b>	n/a
<b>Data source (Link, legal text, date, etc.)</b>	<a href="https://www.ris.bka.gv.at/GeltendeFassung.wxe?Abfrage=Bundesnormen&amp;Gesetzesnummer=10010371">https://www.ris.bka.gv.at/GeltendeFassung.wxe?Abfrage=Bundesnormen&amp;Gesetzesnummer=10010371</a>

**Table 4: ÖPUL 2015 - the Agri-environmental Programme until 2020**

<b>Title of the scheme in English:</b>	ÖPUL 2015 - the Agri-environmental Programme until 2020
<b>Title of the scheme in original language:</b>	ÖPUL 2015 – das Agrar-Umweltprogramm bis 2020
<b>Current status (in force, planned, abandoned):</b>	In force
<b>Date of entering into force:</b>	2015
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	The Agri-environmental Programme ÖPUL 2015 is part of the Austrian Rural Development Programme for the 2014 to 2020 period (LE 14-20). ÖPUL 2015 is the national implementation of four measures of the LE 14-20: the Agri-environment-climate measure (Art. 28), Organic farming (Art. 29), animal welfare (Art. 33) and the NATURA 2000 measure (Art. 30 of EU-Reg. 1305/2013).
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Voluntary
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	<p>The Agri-environmental Programme ÖPUL, Austria's programme for the promotion of an agriculture which is appropriate to the environment, extensive and protective of natural habitats, is intended to foster the environmentally sound management of the agricultural areas in Austria. As early as in 1995 Austria decided to choose an approach which offers a horizontal and integral national agri-environmental programme with a broad spectre of measures. The objective pursued is the participation of Austrian farmers all over the country.</p> <p>The legal basis of the programme is a national Special Ordinance which is implemented on a private administration basis. This Special Ordinance defines the general and specific eligibility criteria for measures.</p>
<b>Sustainability objective mainly addressed:</b>	At present, Austrian agriculture must reconcile the conflicting demands of a competitive production on globalised agricultural markets on the one hand and the demands which society places in an ecologically sustainable production on the other hand. In accordance with the Common Agricultural Policy of the European

	<p>Union the focus of the Austrian agricultural policy is on safeguarding the environmental performance of agriculture for the long term. The measures offered under ÖPUL aim at counteracting the two essential trends in Austrian land management: Abandonment of utilisation and intensified utilisation. By means of ÖPUL 2015, farmers are compensated for additional environmental services they provide by participating in the programme.</p> <p>Taking everything into account, ÖPUL 2015 therefore does not only serve the maintenance of area-wide agriculture and of cultivated landscapes, but also promotes the sustainable development of rural areas and responds to the growing social demand for environmental services. ÖPUL 2015 is 50% financed from EU funds and 50% from national funds (60% Federal Government and 40% Provinces). An amount of altogether 455 million € annually is intended for ÖPUL 2015; of this amount, 112 million € annually are dedicated to measure Organic farming.</p>
<b>Impact on environmental sustainability aspects:</b>	<p>Impacting both environmental &amp; economic sustainability:</p> <ul style="list-style-type: none"> <li>Protecting, maintaining and enhancing biological diversity, also in Natura 2000 areas and in areas that are less-favoured due to natural constraints or other, specific constraints, land management with a high natural value as well as the state of the European landscapes</li> <li>Improving water management, including the use of fertilizers and pesticides</li> <li>Preventing soil erosion and improving soil management</li> <li>Reduction of greenhouse gas and ammonia emissions from agriculture and promotion of carbon storage and carbon sequestration in agriculture and forestry</li> </ul>
<b>Impact on economic sustainability aspects:</b>	
<b>Impact on societal sustainability aspects:</b>	Promotion of the innovation, the cooperation and the development of the knowledge base in rural areas
<b>Authority in charge of execution and/or certification:</b>	<p>Federal Ministry of Agriculture, Forestry, Environment and Water Management Directorate II/3 - Agri-Environment (ÖPUL), Mountain Farmers and Less-Favoured Areas, Organic Farming</p> <p>AMA-AgrarMarkt Austria</p>
<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	Farmers
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	Biomass cultivation and harvest
<b>Level of direct addressing of transport modes:</b>	None

<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	ÖPUL 2015 is a key instrument of the agricultural policy and the rural development in Austria. Overall twenty-two sub-measures are offered, most of them all over Austria. Some measures – especially in the context of water-protection – have a regional focus and therefore are only offered in some regions.
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	Stimulating
<b>Limitations and shortcomings:</b>	None
<b>Any other comments:</b>	n/a
<b>Data source (Link, legal text, date, etc.)</b>	<a href="https://www.bmlfuw.gv.at/english/agriculture/Rural-development/-pul2015until2020.html">https://www.bmlfuw.gv.at/english/agriculture/Rural-development/-pul2015until2020.html</a>

## National sustainability schemes on bioenergy products (solid, liquid)

**Table 5: Regulation on agricultural raw materials for biofuels and bioliquids**

<b>Title of the scheme in English:</b>	Regulation on agricultural raw materials for biofuels and bioliquids
<b>Title of the scheme in original language:</b>	Verordnung über Landwirtschaftliche Ausgangsstoffe für Biokraftstoffe und flüssige Biobrennstoffe 2010 BioVO
<b>Current status (in force, planned, abandoned):</b>	In force
<b>Date of entering into force:</b>	2010
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	Based on the EU directive RL 2009/28/EG
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Obligatory
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	<p>This act regulates the proof of the sustainability of agricultural sources used for the production of biofuels. It includes the basic rules for documentation, monitoring, collection and transmission of relevant data.</p> <p>According to the Directive on the promotion of use of energy from renewable sources, raw materials from agriculture and forestry used to produce biofuels and liquid biofuels must originate from sustainable production.</p> <p>They must not be derived from areas of high environmental importance. Conformity with the EU's cross-compliance provisions is likewise a condition precedent. These sustainability criteria apply to biofuels and their raw materials produced either in the EU or imported from abroad; they are counted towards the national targets.</p> <p>Food production clearly takes precedence over bioenergy production. The production of high-quality food takes priority, followed by feed production. Only the remaining areas are used for bioenergy.</p>



	When using wood, the aim is to ensure cascading use. This means, the various wood varieties should always be used where the greatest value-adding potential can be achieved.
<b>Sustainability objective mainly addressed:</b>	The directive bans the use of areas with high biodiversity levels (e.g. primary forests, nature reserve areas, grassland with high biodiversity) and of areas with high carbon stocks (wet areas, converted forest areas) for the production of raw materials.
<b>Impact on environmental sustainability aspects:</b>	<ul style="list-style-type: none"> <li>• sparing use of renewable resources</li> <li>• biological degradability</li> <li>• climate-friendliness</li> <li>• reduction of environmental footprint and waste production</li> <li>• contribution to the conservation of a sustainable, well-managed cultural landscape</li> </ul>
<b>Impact on economic sustainability aspects:</b>	<ul style="list-style-type: none"> <li>• less dependence on fossil fuels</li> <li>• contribution to securing employment in rural regions</li> <li>• value creation in the country</li> </ul>
<b>Impact on societal sustainability aspects:</b>	
<b>Authority in charge of execution and/or certification:</b>	AMA-AgrarMarkt Austria
<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	<ul style="list-style-type: none"> <li>• producers of sustainable biofuels,</li> <li>• (energy) traders of sustainable biofuels and</li> <li>• marketers of biofuels for whom the achievement of substitution targets is mandatory (with liability to pay tax)</li> <li>• storage operators</li> </ul>
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	Biomass cultivation
<b>Level of direct addressing of transport modes:</b>	None
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Domestic & imported biomass
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	No direct influence
<b>Limitations and shortcomings:</b>	None
<b>Data source (Link, legal text, date, etc.)</b>	<a href="https://www.ris.bka.gv.at/GeltendeFassung.wxe?Abfrage=Bundesnormen&amp;Gesetzesnummer=20006876">https://www.ris.bka.gv.at/GeltendeFassung.wxe?Abfrage=Bundesnormen&amp;Gesetzesnummer=20006876</a>

Table 6: Eco-label Austria 38

<b>Title of the scheme in English:</b>	Eco-label Austria 38
<b>Title of the scheme in original language:</b>	Österreichisches Umweltzeichen 38
<b>Current status (in force, planned, abandoned):</b>	In force
<b>Date of entering into force:</b>	1990



<b>Relation to existing EU regulations, directives, etc. (and which):</b>	None
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Voluntary scheme
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	The Austrian Eco-label provides consumers with an information base for environmentally friendly purchase decisions. It is a state-awarded ecological eco-label that draws the public's attention to the environmentally damaging production, use and disposal of consumer goods, and in turn identifies environmentally-friendly products and services. The sign is awarded in the sectors of products, tourism, green meeting and education.
<b>Sustainability objective mainly addressed:</b>	All fuels with an eco-label, wood chips, pellets and briquettes are guaranteed natural resources: Only secondary products of wood processing (eg sawmill residues and wood chips) are allowed. At least 70 percent of the wood used must come from sustainable forest areas.
<b>Impact on environmental sustainability aspects:</b>	Processing, intermediate storage and transport are also subject to strict criteria: Only natural, chemically unchanged additives for pelletizing and briquetting can be used, for example maize meal. The products may have a maximum water content of 30% when delivered to final consumers. Only renewable energy carriers may be used to dry the starting material, packaged pellets as well as wood chips must be protected from moisture during storage and transport.
<b>Impact on economic sustainability aspects:</b>	No direct impact
<b>Impact on societal sustainability aspects:</b>	No direct impact
<b>Authority in charge of execution and/or certification:</b>	Federal Ministry of Agriculture, Forestry, Environment and Water Management
<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	Biofuel suppliers and traders
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	biomass cultivation, harvest, transport, processing and deployment of bioenergy
<b>Level of direct addressing of transport modes:</b>	Combined certification of production, storage and delivery
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Domestic biofuels
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	No direct influence
<b>Limitations and shortcomings:</b>	None
<b>Any other comments:</b>	n/a
<b>Data source (Link, legal text, date, etc.)</b>	<a href="https://www.umweltzeichen.at/cms/de/fuer-interessierte/richtlinien/content.html">https://www.umweltzeichen.at/cms/de/fuer-interessierte/richtlinien/content.html</a>

## Public and private certification schemes, labels, standardization norms etc. for sustainability of biomass and bioenergy

Table 7: ÖNORM M 9466 & ÖNORM EN 303-5

<b>Title of the scheme in English:</b>	ÖNORM M 9466 - Standard containing emission limits for wood boilers > 50kW & ÖNORM EN 303-5 "Heating boilers for solid fuels, manually and automatically stoked, nominal heat output of up to 500 kW
<b>Title of the scheme in original language:</b>	ÖNORM M 9466 Emissionsbegrenzung für luftverunreinigende Stoffe aus Feuerungsanlagen für Holzbrennstoffe mit einer Nennwärmeleistung ab 50 kW - Anforderungen und Prüfungen am Aufstellungsort ÖNORM EN 303-5 Heizkessel für feste Brennstoffe, manuell und automatisch beschickte Feuerungen, Nenn-Wärmeleistung bis 500 kW - Begriffe, Anforderungen, Prüfungen und Kennzeichnung
<b>Current status (in force, planned, abandoned):</b>	In force
<b>Date of entering into force:</b>	1998 and 2012
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	No relations
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Legally binding
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	These standards especially focus on wood heating boilers and regulate their emissions as well as their safe operation.
<b>Sustainability objective mainly addressed:</b>	Prevention of air pollution and operations risks from wood heating burners
<b>Impact on environmental sustainability aspects</b>	Ensurance of air quality
<b>Impacts on economic sustainability aspects</b>	No direct impact
<b>Impacts on societal sustainability aspects</b>	No direct impact
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	Bioheat production/deployment
<b>Level of direct addressing of transport modes:</b>	None
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Austria
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	None
<b>Limitations and shortcomings:</b>	None
<b>Any other comments:</b>	n/a
<b>Data source (Link, legal text, date, etc.)</b>	ÖNORM M 7510-5 ÖNORM EN 303-5: 2012 11 15

Table 8: Combustion plant ordinance

<b>Title of the scheme in English:</b>	Combustion plant ordinance
<b>Title of the scheme in original language:</b>	Feuerungsanlagenverordnung, FAV
<b>Current status (in force, planned, abandoned):</b>	In force
<b>Date of entering into force:</b>	1997 (amendment 2012)
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	EU directive 2001/80/EG
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Legally binding
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	The FAV applies for all businesses that are subject to the industrial code. The FAV applies for all types of fuel (solid, fluid, gaseous, special biomass fuels) that are combusted in order to produce useful heat in commercial operating plants up to 50 MW. For larger installations, the regulations for steam boilers have to be applied. The amendment of 2012 extends the definition of conventional fuels. This includes liquid biogenic fuels, fuel oil with very low sulfur content, light fuel oil with biogenic components and herbal products such as cereals or grasses. For PM and NO <sub>x</sub> more stringent emission limit values have to be applied. In the case of wood combustion, a change in the oxygen reference value from 13% to 11% leads to a further aggravation of all limit values, even if the numerical value remains unchanged. Furthermore, for combustion plants using straw and other fuels (except wood), emission limit values are set.
<b>Sustainability objective mainly addressed:</b>	Emission threshold values
<b>Impact on environmental sustainability aspects:</b>	Limitation of all kinds of emissions from combustion
<b>Impact on economic sustainability aspects:</b>	No direct impact
<b>Impact on societal sustainability aspects:</b>	No direct impact
<b>Authority in charge of execution and/or certification:</b>	Accredited bodies, e.g. chimney sweepers
<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	Heat/power plants
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	Bioenergy Products heat and power (deployment)
<b>Level of direct addressing of transport modes:</b>	None
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Austria
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	No direct impact
<b>Limitations and shortcomings:</b>	None
<b>Any other comments:</b>	n/a
<b>Data source (Link, legal text, date, etc.)</b>	<a href="https://www.ris.bka.gv.at/GeltendeFassung.wxe?Abfrage=Bundesnormen&amp;Gesetzesnummer=10007873">https://www.ris.bka.gv.at/GeltendeFassung.wxe?Abfrage=Bundesnormen&amp;Gesetzesnummer=10007873</a>

Table 9: Immission Control Act – Air

<b>Title of the scheme in English:</b>	Immission Control Act – Air
<b>Title of the scheme in original language:</b>	Immissionsschutzgesetz – Luft, IG-L
<b>Current status (in force, planned, abandoned):</b>	In force
<b>Date of entering into force:</b>	2010 (amendment)
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	EU directive 2008/50/EG
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Legally binding
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	The Austrian Immission Control - Air Quality Protection Act has established air quality limit values for SO <sub>2</sub> , NO <sub>2</sub> and NO <sub>x</sub> , lead, benzene, CO and PM, as well as target values for ozone. Pollution levels are generally lower than the limit values for lead, benzene and CO. For SO <sub>2</sub> , exceedances are rare and usually caused by transboundary air pollution from neighbouring eastern countries. However, limit values for PM and NO <sub>2</sub> are exceeded frequently in agglomeration areas (Vienna, Graz and Linz), predominantly at heavily frequented sites (NO <sub>2</sub> and PM) and some industrial hot spots (PM).
<b>Sustainability objective mainly addressed:</b>	Protection of human health, animal and plant life
<b>Impact on environmental sustainability aspects:</b>	Prevention of air pollution
<b>Impact on economic sustainability aspects:</b>	No direct impact
<b>Impact on societal sustainability aspects:</b>	No direct impact
<b>Authority in charge of execution and/or certification:</b>	Federal and district administrative authorities
<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	n/a
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	All
<b>Level of direct addressing of transport modes:</b>	None
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Domestic coverage
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	Neutral
<b>Limitations and shortcomings:</b>	None
<b>Any other comments:</b>	n/a
<b>Data source (Link, legal text, date, etc.)</b>	<a href="https://www.ris.bka.gv.at/GeltendeFassung.wxe?Abfrage=Bundesnormen&amp;Gesetzesnummer=10011027">https://www.ris.bka.gv.at/GeltendeFassung.wxe?Abfrage=Bundesnormen&amp;Gesetzesnummer=10011027</a>

## Other

Table 10: Austrian Forest Dialogue

<b>Title of the scheme in English:</b>	Austrian Forest Dialogue
<b>Title of the scheme in original language:</b>	Der österreichische Walddialog
<b>Current status (in force, planned, abandoned):</b>	In force
<b>Date of entering into force:</b>	2003
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	A statutory mandate for the implementation of a forest dialogue can be derived from the regulation of the EU Council (Regulation 1257) on the promotion of rural development.
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Voluntary
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	<p>It is a continuous, open dialogue process which is open to all who have an interest in forests - be it for economic or cultural reasons. The focus is on the search for sustainable forest policies that do not result in a conflict of interest, thereby advocating multilateral solutions that satisfy all the diverse interest groups with respect to forests. The Austrian Forest Dialogue provides the opportunity to exchange different positions in discussions, where stakeholders meet as partners, and to reach a consensus regarding possible solutions to a particular problem, while still being sustainable. Thanks to the Dialogue, the numerous issues relating to forest policy can be subsumed into the various modules and working groups, resulting in a specific and specialist discussion over particular topics of importance.</p> <p>The concept of the National Forest Programmes was developed in the course of the international forest-political dialogue following the 1992 United Nations Conference on Environment and Development in Rio de Janeiro. It has become accepted as a reference framework for the sustainable management, maintenance and development of all types of forests.</p> <p>In order to be able to reconcile the multiple interests in the use of forests for industry in the future, all government institutions, public and private interest groups, as well as any individuals interested in forests, are called upon to further develop the way in which our forests are managed. For this purpose the Austrian Federal Ministry of Agriculture, Forestry, Environment and Water Management has initiated a broad dialogue process within the society to work out an Austrian Forest Programme.</p> <p>The guiding principles of the Austrian Forest Dialogue include:</p> <ul style="list-style-type: none"> <li>• Active participation</li> <li>• Openness</li> <li>• Transparency</li> <li>• Binding force</li> </ul>

	<ul style="list-style-type: none"> <li>• Consistently reach a consensus</li> <li>• Continuity</li> <li>• Holistic, inter-sectoral, and interdisciplinary processes</li> <li>• Consistency with corresponding international conventions and agreements</li> </ul>
<b>Sustainability objective mainly addressed:</b>	<p>The Round Table, headed by Federal Minister of Agriculture, Forestry, Environment and Water Management, is the ultimate decision-making body of the Austrian Forest Dialogue, as outlined in the principles of the Forest Dialogue, and discusses issues surrounding key themes of the forestry sectors in 4 working groups.</p> <p>Around 90 public and private organizations participate in the bodies of the Forest Dialogue, with these organisations representing the interests of the following areas: the environment and nature protection, sports, forestry and agriculture, the wood-based and paper industries, employee and consumer protection, hunting, the Church, development cooperations, the youth, science and education, energy management, the Federal Provinces and, finally, the public administration.</p>
<b>Impact on environmental sustainability aspects:</b>	Working Groups: Forests, Environment, Climate & Forests, Water, Natural hazards
<b>Impact on economic sustainability aspects:</b>	Working Group: Forests, Economy, International affairs
<b>Impact on societal sustainability aspects:</b>	Working Group: Forests, Society, Knowledge
<b>Authority in charge of execution and/or certification:</b>	Federal Ministry of Agriculture, Forestry, Environment and Water Management
<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	Forest owners
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	Biomass cultivation and harvest
<b>Level of direct addressing of transport modes:</b>	Not addressed
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Forest area in Austria
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	Stimulating
<b>Limitations and shortcomings:</b>	None
<b>Any other comments:</b>	n/a
<b>Data source (Link, legal text, date, etc.)</b>	<a href="https://www.bmlfuw.gv.at/english/forestry/AustrianForestDialogue.html">https://www.bmlfuw.gv.at/english/forestry/AustrianForestDialogue.html</a>

Table 11: Waste Management Act 2002

<b>Title of the scheme in English:</b>	Waste Management Act 2002
<b>Title of the scheme in original language:</b>	Abfallwirtschaftsgesetz (AWG)

<b>Current status (in force, planned, abandoned):</b>	In force
<b>Date of entering into force:</b>	2002
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	In line with Waste Framework Directive 2008/98/EC
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Legally binding
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	Waste management in Austria revolves around the principle of sustainable development. The system is based on the Waste Management Act (in line with Waste Framework Directive 2008/98/EC), with its priority being the protection of humans and the environment, and is achieved through minimizing emissions and optimising resource use. The text consists of 91 articles divided into 10 parts as follows: General provisions (1); Prevention of waste and processing of waste (2); General obligations for waste plants (3), Waste collectors and treatment of waste (4), Waste collection and processing systems (5); Waste disposal treatment plants (6), Monitoring (8); Transitional provisions (9); Final provisions (10). Six Annexes are enclosed. The Federal Waste Management Plan and its periodic amendments describe the dynamism and development in the area of waste management.
<b>Sustainability objective mainly addressed:</b>	It affects directly the collection and recycling of biobased materials.
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	Collection and recycling of biobased materials in Austria
<b>Level of direct addressing of transport modes:</b>	Not addressed
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Collection and recycling of biobased materials in Austria
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	No direct impact
<b>Limitations and shortcomings:</b>	None
<b>Any other comments:</b>	n/a
<b>Data source (Link, legal text, date, etc.)</b>	<a href="https://www.ris.bka.gv.at/GeltendeFassung.wxe?Abfrage=Bundesnormen&amp;Gesetzesnummer=20002086">https://www.ris.bka.gv.at/GeltendeFassung.wxe?Abfrage=Bundesnormen&amp;Gesetzesnummer=20002086</a>

### **Assessment of existing sustainability framework conditions along biomass and bioenergy supply chains**

A strict legal framework for forestry has been established in Austria a century ago, which ensures sustainable forest management. The Forestry Act encompasses all measures dealing with the use, care, conservation and protection of forest land. Its key regulations are relevant to maintain its legally determined functions including forestry use along with protective, welfare, and recreational functions. Apart from the growing forest stock, the annual wood growth and the rate of tree fellings are important factors in the assessment of the sustainability of timber use in Austria. Every year since the 1960s, the mean annual growth in forests has exceeded annual



consumption. Presently the growth amounts to 30.4 million cubic metres overbark, while timber use is only 25.9 million cubic metres overbark. This makes forests crucial for economic growth. In 2013 the wood-based sector contributed a gross value of 5 billion € and a trade surplus of 3.41 billion € to Austria's economic performance. Using wood from sustainably managed forests also has a positive impact on climate change, and is a major pillar of the green economy.

No specific requirements have been formulated regarding the use of wood fuels. Hence, currently no specific requirements regarding the sustainability of wood chips, firewood and pellets used in Austria exist. However, forest certification in Austria is well developed. About 75% of Austrian forest area is PEFC certified. In addition, the ENplus® quality seal accounts for the whole wood pellet supply chain – from production to delivery to the final customer, therefore ensuring high quality as well as transparency. It focuses on the quality of the wood pellets, however, the ENplus certification scheme acknowledges the certificates from PEFC, FSC or equivalent forest management systems including their chain of custody certificates. ENplus-Certified Producers are required to document the origin and the share of certified wood materials. Furthermore, the Carbon Footprint (CO<sub>2</sub>-eq emitted per t of pellets produced) of every certified pellet production plant shall be determined. Regarding liquid biofuels the regulation on agricultural raw materials for biofuels and bioliquids exists.

Unlike some other EU countries which apply their environmental programmes only in specific, environmentally sensitive areas, Austria chose an integral, horizontal approach for its agri-environmental program, aiming at the participation of Austrian farmers all over the country. In 2012, 526 million € were paid to 11,200 holdings for 2.2 million ha under the programme. Around 110,200 farms, i.e. 74.6% of all agricultural holdings, managing 89% of the utilised agricultural area, participate in ÖPUL. This high participation rate in the Agri-environmental Programme puts Austria first among the EU Member States. The areas covered by ÖPUL (not including pastures) account for approximately 2.20 million ha. The average aid amounted to 4,800 € per holding. There are currently no concerns, that these legal requirements are not sufficient to ensure sustainable use of Austrian forests and agricultural areas. However, there are concerns that the imported biomass/biofuels are not sustainable. Hence, international certification schemes and sustainability criteria would be desirable.

Regarding the production of heat and power based on biomass strict and effective regulations regarding the environmental sustainability exist:

The combustion of different fuels in commercial furnaces is determined by the Regulation for Combustion Plants (Feuerungsanlagenverordnung (FAV)). The FAV applies for all types of fuel (solid, fluid, gaseous, special biomass fuels) that are combusted in order to produce useful heat in commercial operating plants up to 50 MW. It includes threshold values for carbon monoxide (CO), nitrogen oxides (NO<sub>x</sub>), HC and dust. In addition, the Austrian Immission Control - Air Quality Protection Act has established air quality limit values for SO<sub>2</sub>, NO<sub>2</sub> and NO<sub>x</sub>, lead, benzene, CO and PM, as well as target values for ozone. The ÖNORM M 9466 - Standard containing emission limits for wood boilers > 50kW includes emission limits for air contaminants of boilers of a nominal fuel heat output from 50 kW onwards. The standard covers acceptance inspection, continuous operation, fuel wood, ratings, pollution of the air, air purification, installation locations, limitation



of emissions, firing plants, measurement conditions, nominal thermal output, methods for measuring, measurement, terminology, surveillance (approval), definitions, test reports, testing. Currently the national supplement, ÖNORM EN 303-5 “Heating boilers for solid fuels, manually and automatically stoked, nominal heat output of up to 500 kW, terminology, requirements, testing and marking”, of the corresponding European Standard regulates the type-certification of boilers in Austria. The standard applies for boilers with a thermal output of up to 500 kW that are solely meant for the purpose of combustion of solid fuels.

**Table 12: Assessment of biomass and bioenergy sustainability framework in Austria**

<b>Biomass and bioenergy sustainability framework in Austria - indicators for assessment</b>	<b>High / strict</b>	<b>Medium</b>	<b>Low</b>
Comprehensiveness of regulation regarding entire supply chain and possible bioenergy products (incl. Heat and power production)	X		
Comprehensiveness of regulation regarding target groups		X	
Comprehensiveness of regulation regarding geographical scope (domestic & imported biomass and bioenergy products)		X	
Level of enforcement of existing EU directives	X		
Overall regulatory deepness		X	
Effectiveness in terms of binding character		X	
Effectiveness regarding environmental sustainability	X		
Effectiveness regarding societal sustainability		X	
Effectiveness regarding economic sustainability			X
Level of stimulating impact on market uptake/demand		X	
Level of inhibiting impact on market uptake / demand			X

### **Recommendations for harmonization on national, Danube region and EU wide level**

Bioenergy is the largest source of renewable energy in Austria - even more important than hydropower. Most of it is derived from wood-based biomass, but agricultural biomass, biogenic waste, and sewage gas are also used to produce energy. However, biomass is a raw material that is not available indefinitely. Sustainable limits on the use of biomass must be observed. The additional utilisation potential of wood-based biomass is available almost exclusively in private forests (forest ownership units of up to 200 ha) as, in the forests belonging to the other two ownership categories- industrial and state-owned forests (Österreichische Bundesforste AG)- most of the sustainable wood growth is already in use. The sustained biomass potentials must therefore be mobilized as best as possible and used with maximum efficiency. Furthermore, the economic sustainability should be addressed in a more comprehensive way.

The harmonisation of sustainability criteria on international level is crucial in order to ensure a sustainable and efficient biomass supply on EU level. A multilateral setting is required for international arrangements on the bioenergy trade (i.e. import restrictions); the G8, UNCTAD/UNEP and FAO initiatives seem appropriate forums. However, there could also be an international arrangement on bioenergy trade on Danube region level. Options for establishing sustainability standards for bioenergy under the WTO rules need to be explored in more detail.

Bodies like the EU could partner with interested countries like Brazil or South Africa to create bilateral or multilateral agreements on sustainable bioenergy imports that are subject to standards and verification procedures.

In addition, voluntary schemes should be discussed on international level and seek to include relevant economic players and customer organizations. National governments should be included as forerunners.

The active participation of both civil society and representatives from the affected industries is required in all activities, ensuring multi actor governance.

## 5.2 Bulgaria

### **List of existing sustainability framework conditions (hyperlinks):**

- [Bulgarian Forestry Act](#)
- [National Strategy For The Development Of The Forest Sector 2013 – 2020](#)
- [Strategic Plan For The Development Of The Forest Sector 2014 – 2023](#)
- [Law on Environmental Protection](#)
- [Protected areas act](#)
- [Regulation on sustainability criteria for biofuels & biomass-derived biofuels](#)
- [Energy from Renewable Sources Act \(ERSA\)](#)
- [Forest Stewardship Council & National Forest Stewardship Standard](#)
- [Certifications of compliance with PEFC-endorsed standards](#)
- [International Sustainability and Carbon Certification \(ISCC\)](#)
- [Climate Change Mitigation Act](#)

## National sustainability schemes on biomass feedstock (solid, liquid)

Table 13: Bulgarian Forestry Act

<b>Title of the scheme in English:</b>	Forestry Act (last amended 18.07.2017)
<b>Title of the scheme in original language:</b>	ЗАКОН ЗА ГОРИТЕ
<b>Current status (in force, planned, abandoned):</b>	In force
<b>Date of entering into force:</b>	09.04.2011
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	EU Forest Strategy (22.5.2014)
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Obligatory
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	Regulation of all societal relations regarding conservation, management and exploitation of forest areas in order to ensure multifunctional and sustainable management of forest ecosystems. All forest areas in Bulgaria (including forests on farmland), regardless of their ownership, must be subject to inventory and planning (Art. 13 of the Forest Act). In the planning documents (forestry plans and forestry programs) the permissible volumes of forest use, the so-called "allowable cut" are set. Inventories and plans are reviewed every 10 years. The effective management of state-owned forests, which make up about 75% of all forests, is performed by six State Enterprises. Harvesting permits are issued under the Forest Act on the basis of the provisions of a Forest Management Plan or a plan-extract. Special preference is given to companies that have declared a commitment to certify their forests and forestry activities. In essence, only certified companies may be assigned the development of Forest Management Plans for forest territories (Art. 14) and may be assigned the right to log larger volumes of timber (Art. 115).
<b>Sustainability objective mainly addressed:</b>	Environment - The Act sets up a basic framework for the conservation of forests and (consequently) the support of the functions of 'forest areas', which include "climate regulation and carbon absorption".
<b>Impact on environmental sustainability aspects:</b>	Aims to ensure sustainable management of forest ecosystems Introduction of regulations for the protection and conservation of forests;
<b>Impact on economic sustainability aspects:</b>	Allows sustainable harvesting of forestry resources Equality of the different types of ownership Reducing the administration and decentralization of the responsibilities Separation of the control- and administrative-functions from the economic-functions in the forest sector;
<b>Impact on societal sustainability aspects:</b>	The new Forest Act guarantees the public interests, the right of ownership and protection of forests through: <ul style="list-style-type: none"> <li>• Definition of clear and appropriate regimes for utilization of the resources and access to forests;</li> <li>• Participation of society in the planning; obligatory implementation of long-term planning.</li> </ul>

<b>Authority in charge of execution and/or certification:</b>	MINISTRY OF AGRICULTURE AND FOOD Executive Forestry Agency (EFA)
<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	Biomass producers (forest owners/forest managers) + supply chain of wood + users of wood e.g. saw mills, pulp mills, bioenergy industry + traders & wholesalers + energy producers
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	Biomass cultivation, harvest, transport, processing
<b>Level of direct addressing of transport modes:</b>	n/a
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Domestic
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	In theory stimulating, but effects limited, see below
<b>Limitations and shortcomings:</b>	<ul style="list-style-type: none"> <li>• Timber harvesting regulations are often violated: Illegal logging and transport of timber, incorrect classification of timber</li> <li>• Failing to implement the mechanism for monitoring and evaluation</li> <li>• Lack of sufficient funds from the state budget, etc. to execute the envisaged activities;</li> </ul>
<b>Any other comments:</b>	<p>Further regulations in relation to forest act:</p> <ul style="list-style-type: none"> <li>• Ordinance for Felling in Forests (2011, 2015)</li> <li>• Ordinance of protection and control of the forests (2011, 2015)</li> <li>• Ordinance on the terms and conditions for awarding the implementation of activities in forest areas - state and municipal property, and for the use of timber and non-timber forest products.</li> <li>• Ordinance on the terms and conditions for determination, approval, registration and cancellation of the sources of forest reproduction base, collection and extraction of forest reproductive material, their grading, trade and import. (2012)</li> </ul>
<b>Data source (Link, legal text, date, etc.)</b>	<a href="http://www.iag.bg/data/docs/ZAKON_GORI-07.2017.pdf">http://www.iag.bg/data/docs/ZAKON_GORI-07.2017.pdf</a>

**Table 14: National Strategy For The Development Of The Forest Sector 2013 – 2020**

<b>Title of the scheme in English:</b>	National Strategy For The Development Of The Forest Sector In The Republic Of Bulgaria 2013 – 2020
<b>Title of the scheme in original language:</b>	НАЦИОНАЛНА СТРАТЕГИЯ ЗА РАЗВИТИЕ НА ГОРСКИЯ СЕКТОР В РЕПУБЛИКА БЪЛГАРИЯ ЗА ПЕРИОДА 2013-2020 Г.
<b>Current status (in force, planned, abandoned):</b>	In force
<b>Date of entering into force:</b>	Adopted by the Bulgarian Government on 27.11.2013
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	EU Forest Strategy; European Climate Change Programmes: First and Second EU programmes for climate change; EU Directive 2009/28/EC for support of energy use from renewable energy sources

<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Legally binding targets
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	<p>The National Strategy for 2013-2020 includes the contribution of the forest sector to climate mitigation as part of the strategic vision for 2013-2020. It further lays down three strategic objectives for the medium term:</p> <ol style="list-style-type: none"> <li>1. Ensure sustainable development of the forestry sector by achieving an optimal balance between environmental functions and provision of long-term economic benefits and services.</li> <li>2. Enhance the role of forests in the economic growth of the country and balanced regional socio-economic development.</li> <li>3. Increase the contribution of the forest sector in the green economy.</li> </ol> <p>The corresponding priorities are:</p> <ol style="list-style-type: none"> <li>1. Maintaining healthy, productive and multifunctional forest ecosystems that contribute to mitigate climate change</li> <li>2. Conservation, restoration and maintenance of biological and landscape diversity in forest areas</li> <li>3. Enhancing the vitality and competitiveness of the forest sector</li> <li>4. Exploiting the potential of the forest sector to contribute to development of green economy.</li> </ol>
<b>Sustainability objective mainly addressed:</b>	Environment, society, economic wellbeing
<b>Impact on environmental sustainability aspects:</b>	Maintaining healthy, productive and multifunctional forest ecosystems that contribute to mitigating climate change
<b>Impact on economic sustainability aspects:</b>	Enhancing the vitality and competitiveness of the forest sector and forest ecosystem services
<b>Impact on societal sustainability aspects:</b>	Enhancing the role of forests in the economic growth of the country and balanced regional socio-economic development
<b>Authority in charge of execution and/or certification:</b>	Ministry of Agriculture and Food through the Executive Forest Agency.
<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	Biomass producers (forest owners/forest managers) + supply chain of wood + Users of wood e.g. saw mills, pulp mills, Bioenergy industry + traders & wholesalers + Energy producers
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	Biomass cultivation, harvest, transport, processing
<b>Level of direct addressing of transport modes:</b>	n/a
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Domestic
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	Stimulating
<b>Limitations and shortcomings:</b>	<ul style="list-style-type: none"> <li>• Imperfection of the regulatory framework regulating the forestry activities;</li> </ul>

	<ul style="list-style-type: none"> <li>• Lack of sufficient funds from the state budget, etc. to execute the envisaged activities;</li> <li>• Insufficient information, capacity and motivation of the forestry sector actors;</li> <li>• Failing to implement the mechanism for monitoring and evaluation</li> </ul>
<b>Any other comments:</b>	n/a
<b>Data source (Link, legal text, date, etc.)</b>	<a href="http://www.strategy.bg/FileHandler.ashx?fileId=4209">http://www.strategy.bg/FileHandler.ashx?fileId=4209</a>

**Table 15: Strategic Plan For The Development Of The Forest Sector 2014 – 2023**

<b>Title of the scheme in English:</b>	Strategic Plan For The Development Of The Forest Sector In The Republic Of Bulgaria 2014 – 2023
<b>Title of the scheme in original language:</b>	СТРАТЕГИЧЕСКИ ПЛАН ЗА РАЗВИТИЕ НА ГОРСКИЯ СЕКТОР 2014-2023
<b>Current status (in force, planned, abandoned):</b>	In force
<b>Date of entering into force:</b>	Adopted by the Minister of Agriculture and Food in August, 2014
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	Policy of the EU in the field of protection and sustainable management of the forests: EU Biodiversity Strategy and Action Plans and the Natura 2000 network of protected areas.
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	legally binding targets
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	Priority 14.2. Sustainable and multifunctional forest management Priority 14.3. Legal measures for prevention of illegal logging and decrease of the trade with row timber materials
<b>Sustainability objective mainly addressed:</b>	Safeguarding of the environment
<b>Impact on environmental sustainability aspects:</b>	Sustainable and multifunctional forest management Reduction of greenhouse gas emissions
<b>Impact on economic sustainability aspects:</b>	Employment generation
<b>Impact on societal sustainability aspects:</b>	Employment generation Improvement of social welfare
<b>Authority in charge of execution and/or certification:</b>	Executive Forest Agency
<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	Biomass producers (forest owners/forest managers) + supply chain of wood + Users of wood
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	Biomass cultivation, harvest, transport, processing
<b>Level of direct addressing of transport modes:</b>	n/a
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Private and state-owned forests
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	Stimulating
<b>Limitations and shortcomings</b>	<ul style="list-style-type: none"> <li>• Imperfection of the regulatory framework</li> </ul>

	<ul style="list-style-type: none"> <li>regulating the forestry activities;</li> <li>Lack of sufficient funds from the state budget, etc. to execute the envisaged activities;</li> <li>Insufficient information, capacity and motivation of the forestry sector actors;</li> <li>Failing to implement the mechanism for monitoring and evaluation</li> </ul>
<b>Any other comments:</b>	n/a
<b>Data source (Link, legal text, date, etc.)</b>	<a href="http://www.iag.bg/data/docs/strategicheski_plan_za_razvitiie_na_gsektor.pdf">http://www.iag.bg/data/docs/strategicheski_plan_za_razvitiie_na_gsektor.pdf</a>

**Table 16: Law on Environmental Protection**

<b>Title of the scheme in English:</b>	Law on Environmental Protection
<b>Title of the scheme in original language:</b>	Закон за опазване на околната среда
<b>Current status (in force, planned, abandoned):</b>	In force
<b>Date of entering into force:</b>	25.09.2002
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	Biodiversity strategy for 2020 (2011) Towards a strategy for soil protection (2002)
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Obligatory
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	<ul style="list-style-type: none"> <li>Conservation, development and protection of ecosystems and the biological diversity inherent therein;</li> <li>Soil conservation, sustainable use and recovery shall guarantee effective protection of human health and of the soil functions, considering that soil is a scarce, irreplaceable and practically irrecoverable natural resource.</li> <li>Environmental assessment shall be mandatory for any plans and programmes in the areas of agriculture, forestry, fisheries, transport, energy and waste management</li> </ul>
<b>Sustainability objective mainly addressed:</b>	Environment, society
<b>Impact on environmental sustainability aspects:</b>	<ul style="list-style-type: none"> <li>Prevention of soil degradation</li> <li>Sustained preservation of the multi-functional capacity of soil</li> <li>Application of good land-use practices</li> </ul>
<b>Impact on economic sustainability aspects:</b>	n/a
<b>Impact on societal sustainability aspects:</b>	Protection of human health
<b>Authority in charge of execution and/or certification:</b>	Ministry of Environment and Water
<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	Biomass producers
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	Biomass cultivation, harvest
<b>Level of direct addressing of transport modes:</b>	n/a
<b>Scope of geographical coverage (e.g.</b>	Domestic



<b>origin of the biomass, domestic and/or imported):</b>	
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	No direct impact
<b>Limitations and shortcomings:</b>	None
<b>Any other comments:</b>	n/a
<b>Data source (Link, legal text, date, etc.)</b>	<a href="http://www.moew.government.bg/static/media/ups/tiny/filebase/Industry/Legislation/Zakoni/English_versions/Environmental_Protection_Act.pdf">http://www.moew.government.bg/static/media/ups/tiny/filebase/Industry/Legislation/Zakoni/English_versions/Environmental_Protection_Act.pdf</a>

**Table 17: Protected areas act**

<b>Title of the scheme in English:</b>	Protected Areas Act
<b>Title of the scheme in original language:</b>	ЗАКОН за защитените територии
<b>Current status (in force, planned, abandoned):</b>	In force
<b>Date of entering into force:</b>	11.11.1998
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	Nature and biodiversity law
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Obligatory
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	<ul style="list-style-type: none"> <li>• Conservation and preservation of protected areas</li> <li>• Prevention and control of illegal activities in forests</li> </ul>
<b>Sustainability objective mainly addressed:</b>	Environment
<b>Impact on environmental sustainability aspects:</b>	Forest protection through limited timber harvesting
<b>Impact on economic sustainability aspects:</b>	n/a
<b>Impact on societal sustainability aspects:</b>	n/a
<b>Authority in charge of execution and/or certification:</b>	Ministry of Environment and Water
<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	n/a
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	Timber harvest and transport
<b>Level of direct addressing of transport modes:</b>	n/a
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Domestic
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	Mildly stimulating
<b>Limitations and shortcomings:</b>	None
<b>Any other comments:</b>	n/a
<b>Data source (Link, legal text, date, etc.)</b>	<a href="http://extwprlegs1.fao.org/docs/pdf/bul67271.pdf">http://extwprlegs1.fao.org/docs/pdf/bul67271.pdf</a>



## National sustainability schemes on bioenergy products (solid, liquid)

**Table 18: Regulation on sustainability criteria for biofuels & biomass-derived biofuels**

<b>Title of the scheme in English:</b>	Decree No 302: Regulation on the sustainability criteria for biofuels and biomass-derived biofuels (published in SG No 95 on 4 December 2012)
<b>Title of the scheme in original language:</b>	Наредба за критериите за устойчивост на биогоривата и течните горива от биомаса
<b>Current status (in force, planned, abandoned):</b>	In force
<b>Date of entering into force:</b>	03.01.2013
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	Renewable Energy Directive (Directive 2009/28/EC)
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Obligatory
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	<p>The Regulation lays down the criteria for the sustainability of biofuels and bioliquids and the terms and conditions for:</p> <p>The collection and provision of information by economic operators, including measures taken to protect soil, land, water, air and others;</p> <p>Approval of certification schemes and certification bodies;</p> <p>Performing a biofuel and bioliquid compliance audit with the sustainability criteria;</p> <p>As well as issuing and withdrawing certificates of compliance for biomass raw materials, biofuels and bioliquids with the sustainability criteria as well as the content of the certificates.</p> <p>The economic operators maintain mass balance systems and ensure the traceability of each batch of raw materials and biofuels at all stages of their production, processing, transport and distribution. They are required to keep logbooks with outgoing and incoming references of the issued and received declarations, the sustainability characteristics and amounts of all batches of raw materials, waste materials and residues used for the production of biofuels.</p>
<b>Sustainability objective mainly addressed:</b>	Environment
<b>Impact on environmental sustainability aspects:</b>	<ul style="list-style-type: none"> <li>Greenhouse gas emission savings</li> <li>Protection of land with high biodiversity value and land with high carbon stock</li> </ul>
<b>Impact on economic sustainability aspects:</b>	<ul style="list-style-type: none"> <li>Long-term safeguarding of sustainable renewable energy resources; improved energy security</li> </ul>
<b>Impact on societal sustainability aspects:</b>	n/a
<b>Authority in charge of execution and/or certification:</b>	<ul style="list-style-type: none"> <li>Ministry of Environment and Water</li> <li>State Agency for Metrology and Technical Surveillance to Ministry of Economy and Energy</li> </ul>
<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	n/a
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of</b>	Biomass cultivation, harvest, transport, processing and deployment for bioenergy

<b>bioenergy):</b>	
<b>Level of direct addressing of transport modes:</b>	n/a
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Domestic
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	Stimulating liquid biofuels market
<b>Limitations and shortcomings:</b>	n/a
<b>Any other comments:</b>	n/a
<b>Data source (Link, legal text, date, etc.)</b>	<a href="http://www.seea.government.bg/documents/NAREDBA_za_kriteriite_za_ustojcivost_na_biogorivata_i_tecnite_goriva_ot_biomasa.pdf">http://www.seea.government.bg/documents/NAREDBA_za_kriteriite_za_ustojcivost_na_biogorivata_i_tecnite_goriva_ot_biomasa.pdf</a>

**Table 19: Energy from Renewable Sources Act (ERSA)**

<b>Title of the scheme in English:</b>	Energy from Renewable Sources Act (ERSA)
<b>Title of the scheme in original language:</b>	Закон за енергията от възобновяеми източници
<b>Current status (in force, planned, abandoned):</b>	In force
<b>Date of entering into force:</b>	03.05.2011
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	Transposes the Renewable energy directive (RED), including the sustainability criteria
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Obligatory
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	<ul style="list-style-type: none"> <li>ERSA introduces sustainability criteria, which have to be met for liquid biofuels to be taken into account towards the achievement of the binding national target for the share of renewable energy in transport.</li> <li>Art. 37: sustainability criteria: only materials (vegetal types, forestry, agricultural, fishery and aquaculture wastes and residues) shall be used for production of biofuels and bioliquids, that are 1. not grown on land with high biodiversity value; 2. are not grown on land with high carbon stock (...); 4. the consumption of the biofuels and bioliquids produced by them results in the following reduction of greenhouse gas emissions: to a minimum 35% reduction in GHG emissions as of December 2016; 50% as of January 2017; and at least 60% for bio-fuels and liquid fuels from biomass generated in plants where the production has started from January 1, 2017 – until January 2018.</li> </ul>
<b>Sustainability objective mainly addressed:</b>	Environment
<b>Impact on environmental sustainability aspects:</b>	<ul style="list-style-type: none"> <li>Reduction of greenhouse gas emissions</li> <li>Protection of biodiversity</li> </ul>
<b>Impact on economic sustainability aspects:</b>	Sustainable market for liquid biofuels products due to mandatory blending in both petrol and diesel
<b>Impact on societal sustainability aspects:</b>	n/a
<b>Authority in charge of execution and/or certification</b>	<ul style="list-style-type: none"> <li>Ministry of Energy</li> <li>Ministry of Environment and Waters</li> <li>Sustainable Energy Development Agency (SEDA)</li> </ul>

<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	Biomass producers, bioenergy industry, traders & wholesalers, energy producers
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	Biomass cultivation, harvest, transport, processing and deployment of bioenergy
<b>Level of direct addressing of transport modes:</b>	High
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Domestic
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	Stimulating
<b>Limitations and shortcomings:</b>	n/a
<b>Any other comments:</b>	n/a
<b>Data source (Link, legal text, date, etc.)</b>	<a href="http://www.seea.government.bg/documents/LERS.pdf">http://www.seea.government.bg/documents/LERS.pdf</a>

## Public and private certification schemes, labels, standardization norms etc. for sustainability of biomass and bioenergy

**Table 20: Forest Stewardship Council & National Forest Stewardship Standard**

<b>Title of the scheme in English:</b>	Forest Stewardship Council™ (FSC) National Forest Stewardship Standard (NFC)
<b>Title of the scheme in original language:</b>	See above
<b>Current status (in force, planned, abandoned):</b>	In force
<b>Date of entering into force:</b>	16.08.2017 (NFC)
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	EU forestry strategy
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Voluntary
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	<ul style="list-style-type: none"> <li>The FSC certificate ensures that forests are being managed according to the correct social, economic and environmental standards.</li> <li>FSC chain of custody certification (CoC) verifies that FSC-certified material has been identified and separated from non-certified and non-controlled material as it makes its way along the supply chain from A all the way through to B.</li> </ul>
<b>Sustainability objective mainly addressed:</b>	Environment
<b>Impact on environmental sustainability aspects:</b>	Preserving the natural ecosystem through sustainable forest management
<b>Impact on economic sustainability aspects:</b>	Maintaining or enhancing economic wellbeing of workers and local communities
<b>Impact on societal sustainability aspects:</b>	Maintaining or enhancing the social and economic wellbeing of local communities
<b>Authority in charge of execution and/or certification:</b>	SGS Bulgaria Ltd., <a href="http://www.sgs.bg">http://www.sgs.bg</a>
<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	<ul style="list-style-type: none"> <li>FSC: producer, processor</li> <li>CoC: entire supply chain</li> </ul>
<b>Scope of supply chain elements covered</b>	Biomass cultivation, harvest, transport, processing, trading

<b>(biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	
<b>Level of direct addressing of transport modes:</b>	n/a
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Domestic
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	<ul style="list-style-type: none"> <li>Stimulating for export industries, due to better access to international markets</li> <li>Higher revenues</li> </ul>
<b>Limitations and shortcomings:</b>	n/a
<b>Any other comments:</b>	Currently, 264 companies in Bulgaria are holding a valid certificate.
<b>Data source (Link, legal text, date, etc.)</b>	<a href="http://d2ouvy59p0dg6k.cloudfront.net/downloads/national_fsc_standard_bulgaria_2017_en.pdf">http://d2ouvy59p0dg6k.cloudfront.net/downloads/national_fsc_standard_bulgaria_2017_en.pdf</a>

**Table 21: Certifications of compliance with PEFC-endorsed standards**

<b>Title of the scheme in English:</b>	Certifications of compliance with PEFC-endorsed standards
<b>Title of the scheme in original language:</b>	See above
<b>Current status (in force, planned, abandoned):</b>	<ul style="list-style-type: none"> <li>A national sustainable forest management standard is currently being developed by a multi-stakeholder process. It is expected to undergo pilot and public consultation in 2017.</li> <li>PEFC Chain of Custody certification</li> </ul>
<b>Date of entering into force:</b>	Under development
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	EU forestry strategy
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Voluntary
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	<ul style="list-style-type: none"> <li>PEFC Sustainable Forest Management certification demonstrates that management practices meet requirements for best practice in sustainable forest management.</li> <li>PEFC Chain of Custody certification outlines requirements for tracking certified material from the forest to the final product to ensure that the wood contained in the product or product line originates from certified forests.</li> </ul>
<b>Sustainability objective mainly addressed:</b>	Environment
<b>Impact on environmental sustainability aspects:</b>	Preserving the natural ecosystem through sustainable forest management
<b>Impact on economic sustainability aspects:</b>	Higher prices for timber and timber products, which ensures a forest owner maintains ecosystem service quality
<b>Impact on societal sustainability aspects:</b>	<ul style="list-style-type: none"> <li>Workers' rights and welfare are protected</li> <li>Local employment is encouraged</li> </ul>
<b>Authority in charge of execution and or certification:</b>	SGS Bulgaria Ltd., <a href="http://www.sgs.bg">http://www.sgs.bg</a>
<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	<ul style="list-style-type: none"> <li>Forest Management: producer, processor</li> <li>CoC: entire supply chain</li> </ul>
<b>Scope of supply chain elements covered</b>	Biomass cultivation, harvest, transport, processing

<b>(biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	
<b>Level of direct addressing of transport modes:</b>	n/a
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Domestic
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	<ul style="list-style-type: none"> <li>Stimulating for export industries, due to better access to international markets</li> <li>Higher revenues</li> </ul>
<b>Limitations and shortcomings:</b>	n/a
<b>Any other comments:</b>	Companies have to organize certification and audit process themselves.
<b>Data source (Link, legal text, date, etc.)</b>	<a href="https://www.pefc.org">https://www.pefc.org</a>

**Table 22: International Sustainability and Carbon Certification (ISCC)**

<b>Title of the scheme in English:</b>	International Sustainability and Carbon Certification (ISCC)
<b>Title of the scheme in original language:</b>	See above
<b>Current status (in force, planned, abandoned):</b>	n/a
<b>Date of entering into force:</b>	n/a
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	n/a
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Voluntary
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	<p>ISCC is a leading global certification system that addresses the entire supply chain as well as a variety of agricultural crops, their derivatives and renewables. Applicable to all biomass ISCC helps organizations to demonstrate responsibility towards:</p> <ul style="list-style-type: none"> <li>Reduction of greenhouse gas emissions (GHG),</li> <li>Sustainable land use,</li> <li>Protection of natural biospheres,</li> <li>Increase of social sustainability.</li> </ul> <p>ISCC EU is recognised by the European Commission to demonstrate compliance with RED and FQD.</p>
<b>Sustainability objective mainly addressed:</b>	Environment, society
<b>Impact on environmental sustainability aspects:</b>	<ul style="list-style-type: none"> <li>Protection of land with high biodiversity value or high carbon stock</li> <li>free supply chains</li> <li>Environmentally responsible production to protect soil, water and air</li> </ul>
<b>Impact on economic sustainability aspects:</b>	n/a
<b>Impact on societal sustainability aspects:</b>	<ul style="list-style-type: none"> <li>Safe working conditions</li> <li>Compliance with human, labour and land rights</li> </ul>
<b>Authority in charge of execution and/or certification:</b>	SGS Bulgaria Ltd., <a href="http://www.sgs.bg">http://www.sgs.bg</a>
<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	<ul style="list-style-type: none"> <li>producer, processor, trader, end user.</li> <li>Certificate holder/applicant responsible for proofing sustainability.</li> </ul>

<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	Entire supply chain
<b>Level of direct addressing of transport modes:</b>	n/a
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Domestic, EU
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	Stimulating
<b>Limitations and shortcomings:</b>	n/a
<b>Any other comments:</b>	Currently, 53 companies in Bulgaria are holding a valid certificate. Companies have to organize certification and audit process themselves.
<b>Data source (Link, legal text, date, etc.)</b>	<a href="https://www.iscc-system.org">https://www.iscc-system.org</a>

## Other

**Table 23: Climate Change Mitigation Act**

<b>Title of the scheme in English:</b>	Climate Change Mitigation Act
<b>Title of the scheme in original language:</b>	Закон за ограничаване изменението на климата
<b>Current status (in force, planned, abandoned):</b>	In force
<b>Date of entering into force:</b>	11.03.2014 (last amended 03.02.2017)
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	<ul style="list-style-type: none"> <li>• EU Emissions Trading Scheme</li> <li>• Decision No. 406/2009/EC</li> </ul>
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Obligatory
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	<ul style="list-style-type: none"> <li>• Implementation of state policy on climate change mitigation in compliance with the EU and international legislation, regulation of the National Green Investment Scheme and application of EU emissions trading scheme.</li> <li>• Measures to avoid deforestation</li> <li>• Revenues from sale of assigned amount units (AAUs) shall be used for financing projects, inter alia, for afforestation and reforestation</li> </ul>
<b>Sustainability objective mainly addressed:</b>	Environment
<b>Impact on environmental sustainability aspects:</b>	Reduction of greenhouse gas emissions
<b>Impact on economic sustainability aspects:</b>	n/a
<b>Impact on societal sustainability aspects:</b>	n/a
<b>Authority in charge of execution and/or certification:</b>	Ministry of Environment and Water, Executive Forest Agency and others
<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	Biomass cultivation
<b>Scope of supply chain elements covered</b>	Biomass cultivation



<b>(biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	
<b>Level of direct addressing of transport modes:</b>	n/a
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Domestic
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	Stimulating, if revenues are used for financing projects, inter alia, for afforestation and reforestation
<b>Limitations and shortcomings:</b>	n/a
<b>Any other comments:</b>	n/a
<b>Data source (Link, legal text, date, etc.)</b>	<a href="http://www5.moew.government.bg/?wpfb_dl=17747">http://www5.moew.government.bg/?wpfb_dl=17747</a>

### **Assessment of existing sustainability framework conditions along biomass and bioenergy supply chains**

In order to assess the comprehensiveness of national sustainability regulations for biomass in Bulgaria it is necessary to differentiate between liquid and solid biofuels. Concerning biomass-derived liquid fuels, the current EU Renewable Energy Directive (RED) and Fuel Quality<sup>1</sup> Directive (FQD) have been transposed into Bulgarian legislation<sup>2</sup>, thereby incorporating sustainability criteria.<sup>3</sup> In general, solid biofuels are sustainable if they lead to a minimum of 50% reduction in GHG emissions as of January 2017 and at least 60% for liquid biofuels generated in plants where the production has started from 01/2017 until 01/2018. Furthermore, many local liquid biofuel producers in Bulgaria use voluntarily the ISCC certification for sustainability.

However, in the absence of EU-wide rules for the sustainability of solid biomass used in electricity, heating and cooling, e.g. pellets, there exists no specific Bulgarian national binding legislation specifying requirements for sustainability of solid biomass. Nevertheless, even without specific sustainability schemes, sustainability is addressed through general environmental regulations. Regarding biomass from forests for example, laws and national action plans foresee rules in order to guarantee the sustainable and multifunctional management of forests. These include all three dimensions of sustainability, environmental, economic and social. Sustainable forest certification is promoted through state policy and led to a significant increase in certified forest land (2012: 230,000 ha, 2016: 810,000 ha (Boshnakova, 2017)). FSC and PEFC are the commonly used certifications for sustainable forest management and Chain of Custody. In addition, in 2016, the Ministry of Agriculture started to purchase private forests in order to improve forest management and to prevent clear cutting by forest owners or illegal logging. On product level, Bulgarian solid biomass producers follow European standards (EN 14961-2) and are also applying ENplus-A1, ENplus-A2 and ENplus-B certifications for the quality of woody biomass, but no sustainability certifications have been used so far.

**Table 24: Assessment of biomass and bioenergy sustainability framework in Bulgaria**

<b>Biomass and bioenergy sustainability framework in</b>	<b>High /</b>	<b>Medium</b>	<b>Low</b>
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<sup>1</sup> Fuel Quality is controlled by the State Agency for Metrology and Technical Surveillance.

<sup>2</sup> Through Renewable Energy Sources Act (2011), Ordinance of liquid fuel quality (2011)

<sup>3</sup> The ILUC amendment has not yet been transposed.



Bulgaria indicators for assessment	strict		
Comprehensiveness of regulation regarding entire supply chain and possible bioenergy products		x	
Comprehensiveness of regulation regarding target groups		x	
Comprehensiveness of regulation regarding geographical scope (domestic & imported biomass and bioenergy products)			x
Level of enforcement of existing EU directives		x	
Overall regulatory deepness		x	
Effectiveness in terms of binding character		x	
Effectiveness regarding environmental sustainability		x	
Effectiveness regarding societal sustainability			x
Effectiveness regarding economic sustainability			x
Level of stimulating impact on market uptake/demand		x	
Level of inhibiting impact on market uptake / demand			x

### **Recommendations for harmonization on national, Danube region and EU wide level**

National sustainability criteria for solid biomass extraction and processing should be developed and implemented in Bulgaria. Two assessments of the National Renewable Energy Action Plan stipulated requirements for the biomass industry, such as: a ban on logging in high conservation-value forests and afforestation of unused arable areas of significant biodiversity and enforced use of existing forest certification schemes. All of these could form the basis for a set of national sustainability criteria for biomass extraction (Ratarova, 2012).

Voluntarily certification systems for solid biomass products should be introduced and promoted, e.g. the Sustainable Biomass Programm (SBP) certificate for woody biomass, mostly in the form of wood pellets and wood chips. This also applies with regards to the Danube region biomass markets.

For solid biomass used in electricity, heating and cooling, there are no binding criteria at EU level. Therefore, the EU should introduce obligatory sustainability criteria for all kinds of biomass used, such as in the case of liquid biofuels.

## **5.3 Croatia**

### **List of existing sustainability framework conditions (hyperlinks)**

- [Croatian Forest Act](#)
- [Act on the Short Rotation Coppice](#)
- [National Action Plan of Promoting Production & Use of Biofuels in Transport](#)
- [Order on Application of Sustainability Demands in Production and Usage of Biofuels](#)
- [Act on Biofuels for Transport](#)
- [Order on the Measures for Prompting the Use of Biofuels in Transport](#)
- [Renewable Energy Resources and High-Efficiency Cogeneration Order](#)
- [Order on Conditions & Measures for Service Quality System Certifying RES Installers](#)

- Tariff System for Production of Electricity from RES & Cogeneration

## National sustainability schemes on biomass feedstock (solid, liquid)

Table 25: Croatian Forest Act

<b>Title of the scheme in English:</b>	Forest Act
<b>Title of the scheme in original language:</b>	Zakon o šumama
<b>Current status (in force, planned, abandoned):</b>	In force
<b>Date of entering into force:</b>	08.08.2014
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	The first instance of the Act was in the current form introduced in 2004, before the Croatian admission to EU and has not been updated directly according to current EU directives.
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Obligatory
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	This act prescribes the cultivation, conservation, usage and management of forests and forest areas as a natural resource, with the aim of keeping the biodiversity and ensuring the overall management based on the economic sustainability, social responsibility and ecological acceptability. It also aims to keep the national interests in forest management by implementing measures which ensure the continuous maintenance and renewal.
<b>Sustainability objective mainly addressed:</b>	All three pillars of sustainability
<b>Impact on environmental sustainability aspects:</b>	The act aims to estimate the influence of the climate change on the forests and forest areas including the influence on their biodiversity.
<b>Impact on economic sustainability aspects:</b>	Supervision of the implementation of forest economic plans and usage of non-wood forest products
<b>Impact on societal sustainability aspects:</b>	Increasing the knowledge of the conditions of forests and forest areas and its relationship to the natural and anthropogenic risk factors
<b>Authority in charge of execution and / or certification:</b>	Hrvatske šume, d.o.o.
<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	Private owners, biomass suppliers
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	Biomass cultivation, harvest
<b>Level of direct addressing of transport modes:</b>	Medium
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Domestic
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	Neutral
<b>Limitations and shortcomings:</b>	The proposal for an updated version of this law seems to be more oriented on forest management and the

	conversion of the forests and/or forest areas to different types, rather than their conservation.
<b>Any other comments:</b>	n/a
<b>Data source (Link, legal text, date, etc.)</b>	Official gazette, 2014

**Table 26: Act on the Short Rotation Coppice**

<b>Title of the scheme in English:</b>	Act on Short Rotation Coppice
<b>Title of the scheme in original language:</b>	Zakon o drvenastim kulturama kratkih ophodnji
<b>Current status (in force, planned, abandoned):</b>	Planned
<b>Date of entering into force:</b>	Not entered into force yet
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	None
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Not decided yet
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	This Act would define and regulate the area of planting and using short rotation coppice. It would prescribe the way the biomass is grown and used, types of the biomass, types of the areas on which they can be planted and finally the managing of the producer's register and supplying an expert supervision.
<b>Sustainability objective mainly addressed:</b>	Increase of using woody biomass in energy production as a renewable and environmentally acceptable energy source
<b>Impact on environmental sustainability aspects:</b>	Increase of the RES in the energy and heat production on national level
<b>Impact on economic sustainability aspects:</b>	The national energy and economic development would be supported by this Act by increasing the safety of energy supply by adding additional energy source
<b>Impact on societal sustainability aspects:</b>	Raising the awareness of the RES in the energy production and social responsibility
<b>Authority in charge of execution and / or certification:</b>	Ministry of Agriculture
<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	Biomass producers
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	Biomass cultivation, harvest
<b>Level of direct addressing of transport modes:</b>	Low
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Domestic
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	Stimulating
<b>Limitations and shortcomings:</b>	In the present form it would appear that the current state owned company managing 80% of forests would benefit most from this Act
<b>Any other comments:</b>	n/a
<b>Data source (Link, legal text, date, etc.)</b>	E-savjetovanja, 2017

### National sustainability schemes on bioenergy products (solid, liquid)

**Table 27: National Action Plan of Promoting Production & Use of Biofuels in Transport**

<b>Title of the scheme in English:</b>	National Action Plan of Promoting the Production and Use of Biofuels in Transport from 2011-2020
<b>Title of the scheme in original language:</b>	Nacionalni akcijski plan poticanja proizvodnje i korištenja biogoriva u prijevozu za razdoblje 2011–2020
<b>Current status (in force, planned, abandoned):</b>	In force
<b>Date of entering into force:</b>	January 2010
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	<ul style="list-style-type: none"> <li>• Directive 2003/30/EC on the promotion of the use of biofuels or other renewable fuels for transport</li> <li>• Biomass action plan (COM (2005) 628)</li> <li>• EC strategy on biofuels (COM (2006) 34)</li> <li>• Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC</li> <li>• Directive 2009/33/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of clean and energy-efficient road transport vehicles</li> </ul>
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Binding
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	This is a planning document for the period of ten years, in accordance to the Directive 2009/28/EC and the strategy for energy development, sustainable development, agricultural strategy as well as national forestry strategy and policies to determine the policy of promoting the increase of production and use of biofuels in the transport sector for the Republic of Croatia. It consists of the review of the current market of fuels for transport and air protection, comparative analyzes, long-term goals (e.g. establishing the biofuel market and measures to increase the production and use of biofuels in transport).
<b>Sustainability objective mainly addressed:</b>	Promoting the use of biofuels in transport sector
<b>Impact on environmental sustainability aspects:</b>	Reducing the GHG emissions and higher penetration of RES in the transport sector
<b>Impact on economic sustainability aspects:</b>	With more incentives and easier establishment of new production facilities there's a potential of more work places being created as well as the export of the final product
<b>Impact on societal sustainability aspects:</b>	Increasing the production of biofuels with competitive prices, general public could be drawn to the use of RES in the transport sector
<b>Authority in charge of execution and / or certification:</b>	Different authorities in charge, depending on the part of the plan
<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	Cultivation/harvest, processors and end users
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport,</b>	All

<b>processing and/or deployment of bioenergy):</b>	
<b>Level of direct addressing of transport modes:</b>	Low
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Domestic
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	Stimulating
<b>Limitations and shortcomings:</b>	None
<b>Any other comments:</b>	n/a
<b>Data source (Link, legal text, date, etc.)</b>	Ministry of Environment and Energy, 2010

**Table 28: Order on Application of Sustainability Demands in Production and Usage of Biofuels**

<b>Title of the scheme in English:</b>	The Order of the Means and Conditions of Application of Sustainability Demands in Production and Usage of Biofuels
<b>Title of the scheme in original language:</b>	Pravilnik o načinu i uvjetima primjene zahtjeva održivosti u proizvodnji i korištenju biogoriva
<b>Current status (in force, planned, abandoned):</b>	In force
<b>Date of entering into force:</b>	28.06.2013
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing directives 2001/77/ec and 2003/30/ec
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Obligatory
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	This Order prescribes the means, conditions and deadlines of the application of the sustainability demands and compatibility with the sustainability criteria in the production and use of biofuels. It prescribes the methodology of calculating the reduction of GHG compared to using conventional diesel/gasoline fuel, with also prescribing the criteria of sustainability for biofuels.
<b>Sustainability objective mainly addressed:</b>	To reduce the emissions of GHG in the lifecycle of the fuels used in transport
<b>Impact on environmental sustainability aspects:</b>	Reducing the emissions of GHG
<b>Impact on economic sustainability aspects:</b>	n/a
<b>Impact on societal sustainability aspects:</b>	Reducing the negative influence of raw material and biofuel production on the overall social acceptance of biobased fuels
<b>Authority in charge of execution and / or certification:</b>	Authorized independent body / Croatian energy regulation agency
<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	End users in charge of biofuel production
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport,</b>	Processing and deployment of bioenergy

<b>processing and/or deployment of bioenergy):</b>	
<b>Level of direct addressing of transport modes:</b>	Low
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Domestic and imported
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	Stimulating
<b>Limitations and shortcomings:</b>	n/a
<b>Any other comments:</b>	n/a
<b>Data source (Link, legal text, date, etc.)</b>	Official gazette, 2013

**Table 29: Act on Biofuels for Transport**

<b>Title of the scheme in English:</b>	Act on Biofuels for Transport
<b>Title of the scheme in original language:</b>	Zakon o biogorivima za prijevoz
<b>Current status (in force, planned, abandoned):</b>	In force
<b>Date of entering into force:</b>	30.05.2009
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	The Act was in force before the Croatian admission to EU and has not changed in the meantime according to any of the currently active European directives
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Obligatory
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	This Act governs the production, trading and storing of biofuels and other renewable fuels, the use of biofuels in transport, defining programmes and plans to promote production and use of biofuels. It aims to reduce the negative influences of transport to the environment, increase the security of fuel supply in an ecologically acceptable manner. It should meet the fuel demand by users and also fulfil the national obligations regarding the reduction of GHG.
<b>Sustainability objective mainly addressed:</b>	Reducing the negative influences of transport on the environment
<b>Impact on environmental sustainability aspects:</b>	Subsequent reduction of the GHG emissions during the production and use of biofuels
<b>Impact on economic sustainability aspects:</b>	Promoting private investments in the production of biofuels
<b>Impact on societal sustainability aspects:</b>	Increase the awareness and usage of alternative fuels in personal and public transport
<b>Authority in charge of execution and / or certification:</b>	Environmental Protection and Energy Efficiency Fund
<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	End users, producers
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	Biomass processing and biofuel deployment
<b>Level of direct addressing of transport modes:</b>	Low



<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Domestic
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	Stimulating
<b>Limitations and shortcomings:</b>	n/a
<b>Any other comments:</b>	n/a
<b>Data source (Link, legal text, date, etc.)</b>	Official gazette, 2009, 2010

**Table 30 Order on the Measures for Promting the Use of Biofuels in Transport**

<b>Title of the scheme in English:</b>	Order on the Measures for Promting the Use of Biofuels in Transport
<b>Title of the scheme in original language:</b>	Pravilnik o mjerama za poticanje korištenja biogoriva u prijevozu
<b>Current status (in force, planned, abandoned):</b>	In force
<b>Date of entering into force:</b>	08.05.2010
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	<ul style="list-style-type: none"> <li>• Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC</li> <li>• Directive 2003/30/EC of the European Parliament and of the council of 8 May 2003 on the promotion of the use of biofuels or other renewable fuels for transport</li> </ul>
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Legally binding
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	This Order prescribes the measures of promoting the use of biofuels in transport and their implementation which includes the creation of the national action plan and the creation of the programme for the counties and big cities. It also prescribes the handling of the register of the biofuels producers and traders as well as the methodology of calculating the share of RES in transport and the calculation of the fulfilment of the national goal of placing the biofuels on market.
<b>Sustainability objective mainly addressed:</b>	Increasing the use of biofuels in transport
<b>Impact on environmental sustainability aspects:</b>	Reduction of GHG emissions in both, the production and the use of biofuels
<b>Impact on economic sustainability aspects:</b>	Promoting and controlling the market of biofuels
<b>Impact on societal sustainability aspects:</b>	Raising the awareness of using alternative fuels in the transport sector (both public and private)
<b>Authority in charge of execution and / or certification:</b>	Ministry of Economy, Entrepreneurship and Crafts
<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	End users, Biofuel producers
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport,</b>	Processing of biomass, deployment of biofuels



<b>processing and/or deployment of bioenergy):</b>	
<b>Level of direct addressing of transport modes:</b>	Low
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Domestic
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	Stimulating
<b>Limitations and shortcomings:</b>	n/a
<b>Any other comments:</b>	n/a
<b>Data source (Link, legal text, date, etc.)</b>	Official gazette, 2010

## Public and private certification schemes, labels, standardization norms etc. for sustainability of biomass and bioenergy

**Table 31: Renewable Energy Resources and High-Efficiency Cogeneration Order**

<b>Title of the scheme in English:</b>	Renewable Energy Resources and High-Efficiency Cogeneration Order
<b>Title of the scheme in original language:</b>	Pravilnik o obnovljivim izvorima energije i visokoučinkovitoj kogeneraciji
<b>Current status (in force, planned, abandoned):</b>	Planned
<b>Date of entering into force:</b>	Not entered into force yet
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	<ul style="list-style-type: none"> <li>• Directive 2009/28/EC of the European Parliament and of the Council and of the council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC</li> <li>• Directive 2012/27/EU of the European parliament and of the Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives</li> <li>• 2004/8/EC and 2006/32/EC</li> </ul>
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	n/a
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	This Order in more detail supports the Act on Renewable Energy Resources and High-Efficiency Cogeneration, and prescribes the classification of the energy production plants. It also determines the methodology of calculation of the renewable energy share in the direct consumption. It defines the Register of RES and preferred producers, and also the methodology of calculating the maximum referent and guaranteed values for electricity prices.
<b>Sustainability objective mainly addressed:</b>	Increasing the share of the RES in overall energy production
<b>Impact on environmental sustainability aspects:</b>	By increasing the share of RES in energy production the need of using other sources would be decreased (energy security)

<b>Impact on economic sustainability aspects:</b>	Prescribing the prices and incentives it would draw more preferred producers to the energy market
<b>Impact on societal sustainability aspects:</b>	By increasing a RES share in the production of energy, more awareness to the issue of using RES would be gained in broader public
<b>Authority in charge of execution and / or certification:</b>	n/a
<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	End users, energy producers, owners of RES power plants
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	Energy production from biomass
<b>Level of direct addressing of transport modes:</b>	Low
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Domestic
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	Stimulating
<b>Limitations and shortcomings:</b>	There's a concern that the bureaucratic level is not reduced in respect to the current state, and that the current producers would benefit more than the new investors.
<b>Any other comments:</b>	n/a
<b>Data source (Link, legal text, date, etc.)</b>	E-savjetovanja, 2016

**Table 32: Order on Conditions & Measures for Service Quality System Certifying RES Installers**

<b>Title of the scheme in English:</b>	Order on the Conditions and Measures to Establishing a Service Quality System for Certifying Installers of the Renewable Energy Sources – Smaller Boilers and Biomass Fired Furnaces
<b>Title of the scheme in original language:</b>	Pravilnik o uvjetima i mjerilima za utvrđivanje sustava kvalitete usluga i radova za certificiranje instalatera obnovljivih izvora energije – manjih kotlova i peći na biomasu
<b>Current status (in force, planned, abandoned):</b>	In force
<b>Date of entering into force:</b>	16.04.2015
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	This Order directly covers the Directive 2009/28/EC of the European Parliament and Council from April 23 <sup>rd</sup> 2009 on promoting the use of energy from renewable sources
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Obligatory
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	It prescribes the system of certifying the installers for the buildings related to the energy transformation from smaller boilers and biomass fired furnaces. It prescribes the contents and the methods of implementation of the training programme and testing.

<b>Sustainability objective mainly addressed:</b>	To increase the use of the RES in terms of higher instalments of biomass fired furnaces in small to large buildings
<b>Impact on environmental sustainability aspects:</b>	Lower dependence on fossil fuels for heating purposes (primarily)
<b>Impact on economic sustainability aspects:</b>	Increase in self-employment of future installers
<b>Impact on societal sustainability aspects:</b>	Raising the awareness and benefits on transition from fossil fuels to RES in heating sector
<b>Authority in charge of execution and / or certification:</b>	Ministry of Construction and Physical Planning
<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	End users, installers
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	Biomass deployment and usage
<b>Level of direct addressing of transport modes:</b>	Low
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Domestic
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	Stimulating
<b>Limitations and shortcomings:</b>	n/a
<b>Any other comments:</b>	n/a
<b>Data source (Link, legal text, date, etc.)</b>	Official gazette, 2015

## Other

**Table 33: Tariff System for Production of Electricity from RES & Cogeneration**

<b>Title of the scheme in English:</b>	Tariff System for the Production of Electricity From Renewable Energy Sources and Cogeneration
<b>Title of the scheme in original language:</b>	Tarifni sustav za proizvodnju električne energije iz obnovljivih izvora energije i kogeneracije
<b>Current status (in force, planned, abandoned):</b>	In force
<b>Date of entering into force:</b>	31.12.2012
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	n/a
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Obligatory
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	It regulates the right of eligible electricity producers to an incentive price of electricity paid by the market operator for the electricity produced and delivered from plants using renewable energy sources and cogeneration plants. It defines the amounts of fixed tariff items and the variable part of tariff items for electricity produced in plants using renewable energy sources and cogeneration plants, depending on the type of source, power and other elements of delivered electricity, as

	well as the manner and conditions of application of those elements
<b>Sustainability objective mainly addressed:</b>	Increases in the overall share of RES used for energy and heat production by offering an incentive prices for eligible producers
<b>Impact on environmental sustainability aspects:</b>	By increasing the share of RES in energy production on national level, the amount of fossil fuel based large furnaces would decrease
<b>Impact on economic sustainability aspects:</b>	An increase of biomass fired CHP plants would increase employment on a local scale, mostly in the rural/forest areas
<b>Impact on societal sustainability aspects:</b>	None
<b>Authority in charge of execution and / or certification:</b>	Croatian Energy Market Operator
<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	End users
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	Deployment of bioenergy
<b>Level of direct addressing of transport modes:</b>	Low
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Domestic
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	Stimulating
<b>Limitations and shortcomings:</b>	n/a
<b>Any other comments:</b>	n/a
<b>Data source (Link, legal text, date, etc.)</b>	Official gazette, 2013

### **Assessment of existing sustainability framework conditions along biomass and bioenergy supply chains**

Regulations regarding the biomass entire supply chain are not comprehensive enough and also poorly mentioned in Croatian legislation. On the other side, the possible bioenergy products are well represented in the national action plan for bioenergy.

Regulations regarding target groups are far from comprehensive in Croatia. Target groups are only mentioned in the national action plan for biofuels. Regulations regarding the geographical scope can be deemed as non-existent. Most of the primary and secondary products related to biomass are being exported, without any effort or regulation to ensure or encourage its placement on the local markets.

The level of enforcement of existing EU directives can be evaluated as high, but the problem that arises is a significant time delay of enforcement existing EU directives into Croatian legislation.

The overall regulatory deepness is a pressing issue in Croatia. The reason for that is a delay of the implementation by law, for more than one and a half year (it was supposed to be implemented on

01.01.2015.). This delay presents a great obstacle for the new investments in biomass power plants. Effectiveness in terms of binding character can be evaluated as low. The reason for that is the lack of penalties. In terms of effectiveness regarding environmental sustainability, some progress is expected to be made. One of the aims of the planned Act of Short Rotation Woody Crops is to improve environmental sustainability in the field of short rotation woody crops. Stimulating impact on market uptake/demand can be evaluated as low. In Croatia, as in many other countries, most public buildings are still mostly using fossil fuels such as natural gas or fuel oil as a heating energy source. This results in a great percent of exported biomass. The impacts on the market are only medium, but rather stimulating than inhibiting.

**Table 34: Assessment of biomass and bioenergy sustainability framework in Croatia**

<b>Biomass and bioenergy sustainability framework in Croatia: indicators for assessment</b>	<b>High / strict</b>	<b>Medium</b>	<b>Low</b>
Comprehensiveness of regulation regarding entire supply chain and possible bioenergy products		X	
Comprehensiveness of regulation regarding target groups		X	
Comprehensiveness of regulation regarding geographical scope (domestic & imported biomass and bioenergy products)			X
Level of enforcement of existing EU directives		X	
Overall regulatory deepness		X	
Effectiveness in terms of binding character			X
Effectiveness regarding environmental sustainability		X	
Effectiveness regarding societal sustainability			X
Effectiveness regarding economic sustainability		X	
Level of stimulating impact on market uptake/demand		X	
Level of inhibiting impact on market uptake / demand			X

### **Recommendations for harmonization on national, Danube region and EU wide level**

On the national level, even though there is currently a number of acts/decrees/orders in force and a comprehensive national action plan, the implementation is still slow in most cases. Enforcing the acts and promoting the planned ones should be swift and effective, with concurrent incentives/stimulation and penalty system to keep only the quality producers with focus on sustainability active, and to make room in the market for new actors making it more competitive.

Furthermore, an additional dissemination of the plans on a local scale could be beneficial, mostly in rural areas which strongly depend on the well-established schemes of placing their products on the market. By diversifying the market placement and learning about the new models of using the crop residues, the interest in using currently abandoned areas/fallow land for new cultures could rise, which can be used locally, but also be exported (short rotation energy crops) and could contribute to environmental and economic sustainability.

Establishing centralized collection points for raw biomass, would benefit both, producers and processors. A network of collection points (which could be handled both by the state and by private investment-traders) could simplify the flow of biomass from the crop fields to the end users. It could also improve the efficiency and sustainability of biomass transport with new modes being implemented more easily (placing the collection point next to the waterway or a railway) – even extended to an international level. This also applies to the international / Danube level.

## 5.4 Germany

### List of existing sustainability framework conditions (hyperlinks):

- [Forest Reproductive Material Act](#)
- [German National Forest Act](#)
- [German National Forest Act §2](#)
- [Announcement 05/10/31](#)
- [Biomass Sustainability Regulation](#)
- [Federal Nature Conservation Act §5](#)
- [Ordinance on the Generation of Electricity from Biomass](#)
- [Immission Control Act - Ordinance on small & medium-sized combustion plants](#)
- [Federal Immission Control Act](#)
- [Biofuel Quota Act](#)
- [Biofuel Sustainability Regulation](#)
- [Renewable Energy Sources Act](#)
- [Renewable Energies Heat Act](#)
- [ISCC Certificate](#)
- [RedCert](#)
- [Joint Task on Agricultural Structures and Coastal Protection](#)
- [Market Incentive Programme](#)

### National sustainability schemes on biomass feedstock (solid, liquid)

Table 35: Forest Reproductive Material Act

<b>Title of the scheme in English:</b>	Forest Reproductive Material Act
<b>Title of the scheme in original language:</b>	Forstvermehrungsgutgesetz
<b>Current status (in force, planned, abandoned):</b>	In force
<b>Date of entering into force:</b>	22.05.2002 (Last amendment: 31.08.2015)
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	Directive 1999/105/EC – Council Directive on the marketing of forest reproductive material
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Obligatory
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	Production, marketing, import and export of forest reproductive material (seeds, parts of plants and seedlings) is regulated with this act.
<b>Sustainability objective mainly addressed:</b>	Forestry; Reproductive material of forest trees
<b>Impact on environmental sustainability aspects:</b>	Preservation of genetic diversity
<b>Impact on economic sustainability aspects:</b>	Handling of forest reproductive material is only possible within the framework of this act; Maintain the performance of forestry
<b>Impact on societal sustainability aspects:</b>	Preservation of all forest functions
<b>Authority in charge of execution and/or certification:</b>	Forest Authority of the federal states

<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	Producer of the reproductive material
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	Biomass cultivation
<b>Level of direct addressing of transport modes:</b>	Import/export of forest reproductive material
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Domestic and imported forest reproductive material
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	Neutral
<b>Limitations and shortcomings:</b>	n/a
<b>Any other comments:</b>	n/a
<b>Data source (Link, legal text, date, etc.)</b>	<a href="https://s2biom.vito.be/node/942">https://s2biom.vito.be/node/942</a> <a href="http://www.gesetze-im-internet.de/fovg/">http://www.gesetze-im-internet.de/fovg/</a>

**Table 36: German National Forest Act**

<b>Title of the scheme in English:</b>	National Forest Act
<b>Title of the scheme in original language:</b>	Gesetz zur Erhaltung des Waldes und zur Förderung der Forstwirtschaft (Bundeswaldgesetz)
<b>Current status (in force, planned, abandoned):</b>	In force
<b>Date of entering into force:</b>	02.05.1975 (last amended 27.01.2017)
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	None
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Obligatory
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	This Act was created to promote forestry, the sustainable use of forest resources and to outline the importance of forest ecosystems for the whole society.
<b>Sustainability objective mainly addressed:</b>	Healthy and sustainable forestry
<b>Impact on environmental sustainability aspects:</b>	Secure efficiency of forest ecosystems
<b>Impact on economic sustainability aspects:</b>	Secure sustainable management of forests
<b>Impact on societal sustainability aspects:</b>	Preserving forests for the needs of society
<b>Authority in charge of execution and/or certification:</b>	Ministry of Food and Agriculture, Forestry Authorities of the Federal States
<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	Forest owners (state and private)
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	Biomass cultivation, harvest, transport
<b>Level of direct addressing of transport modes:</b>	n/a



<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Domestic
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	Stimulating
<b>Limitations and shortcomings:</b>	n/a
<b>Any other comments:</b>	n/a
<b>Data source (Link, legal text, date, etc.)</b>	<a href="https://s2biom.vito.be/node/941">https://s2biom.vito.be/node/941</a> <a href="http://www.gesetze-im-internet.de/bwaldg/">http://www.gesetze-im-internet.de/bwaldg/</a>

**Table 37: German National Forest Act §2**

<b>Title of the scheme in English:</b>	National Forest Act §2
<b>Title of the scheme in original language:</b>	Gesetz zur Erhaltung des Waldes und zur Förderung der Forstwirtschaft (Bundeswaldgesetz) §2
<b>Current status (in force, planned, abandoned):</b>	In force
<b>Date of entering into force:</b>	02.05.1975 (last amended 27.01.2017)
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	None
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Obligatory
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	In §2 a definition of SRC (short rotation coppice) is given.
<b>Sustainability objective mainly addressed:</b>	Production of wood on agricultural sites – e.g. short rotation coppice (SRC)
<b>Impact on environmental sustainability aspects:</b>	According to §2 SRCs are not considered as forests as long as the whole rotation duration does not exceed 20 years
<b>Impact on economic sustainability aspects:</b>	According to §2 SRCs are not considered as forests as long as the whole rotation duration does not exceed 20 years
<b>Impact on societal sustainability aspects:</b>	n/a
<b>Authority in charge of execution and/or certification:</b>	Ministry of Food and Agriculture, Forestry Authorities of the Federal States
<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	SRC owners
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	Biomass cultivation, harvest
<b>Level of direct addressing of transport modes:</b>	n/a
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Domestic
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	Stimulating
<b>Limitations and shortcomings:</b>	n/a
<b>Any other comments:</b>	n/a
<b>Data source (Link, legal text, date, etc.)</b>	<a href="https://s2biom.vito.be/node/941">https://s2biom.vito.be/node/941</a> <a href="http://www.gesetze-im-internet.de/bwaldg/">http://www.gesetze-im-internet.de/bwaldg/</a>

Table 38: Announcement 05/10/31

<b>Title of the scheme in English:</b>	Announcement 05/10/31
<b>Title of the scheme in original language:</b>	Bekanntmachung 05/20/31
<b>Current status (in force, planned, abandoned):</b>	In force
<b>Date of entering into force:</b>	12.05.2010
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	EG 1120/2009
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Obligatory
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	This announcement contains the suitable and allowed tree species for SRC. Furthermore the maximum harvest cycle is determined.
<b>Sustainability objective mainly addressed:</b>	Production of wood on agricultural sites
<b>Impact on environmental sustainability aspects:</b>	n/a
<b>Impact on economic sustainability aspects:</b>	Variety of tree species for SRC is limited
<b>Impact on societal sustainability aspects:</b>	n/a
<b>Authority in charge of execution and/or certification:</b>	Federal Office for Agriculture and Food
<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	SRC owners
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	Biomass cultivation
<b>Level of direct addressing of transport modes:</b>	n/a
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Domestic
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	Neutral
<b>Limitations and shortcomings:</b>	n/a
<b>Any other comments:</b>	n/a
<b>Data source (Link, legal text, date, etc.)</b>	Bundesanzeiger.de

Table 39: Biomass Sustainability Regulation

<b>Title of the scheme in English:</b>	Biomass Sustainability Regulation
<b>Title of the scheme in original language:</b>	Biomassestrom-Nachhaltigkeitsverordnung
<b>Current status (in force, planned, abandoned):</b>	In force
<b>Date of entering into force:</b>	23.07.2009 (Last amendment: 2014)
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	Based on 2009/28/EG
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Voluntary

<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	The purpose is to ensure the sustainability of the generation of electricity and heat from liquid biomass. According to this regulation, liquid biomass, which is used for electricity generation, can only be reimbursed if it is produced in compliance with binding sustainability standards.
<b>Sustainability objective mainly addressed:</b>	Ensure sustainable agricultural production
<b>Impact on environmental sustainability aspects:</b>	Protection of areas with a high conservation value, protection of high carbon stock sites, protection of peat bogs, sustainable agricultural management
<b>Impact on economic sustainability aspects:</b>	Funding is only possible if this regulation is considered
<b>Impact on societal sustainability aspects:</b>	Preservation of biodiversity
<b>Authority in charge of execution and/or certification:</b>	Federal Ministry for the Environment, Nature Conservation and Nuclear Safety
<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	Producers of biomass, plant operators (end users)
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	Biomass cultivation, processing, deployment
<b>Level of direct addressing of transport modes:</b>	n/a
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Domestic and imported biomass
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	Stimulating
<b>Limitations and shortcomings:</b>	n/a
<b>Any other comments:</b>	n/a
<b>Data source (Link, legal text, date, etc.)</b>	<a href="https://s2biom.vito.be/node/926">https://s2biom.vito.be/node/926</a> <a href="http://www.gesetze-im-internet.de/bundesrecht/biost-nachv/gesamt.pdf">http://www.gesetze-im-internet.de/bundesrecht/biost-nachv/gesamt.pdf</a>

**Table 40: Federal Nature Conservation Act §5**

<b>Title of the scheme in English:</b>	Federal Nature Conservation Act §5
<b>Title of the scheme in original language:</b>	Bundesnaturschutzgesetz §5
<b>Current status (in force, planned, abandoned):</b>	In force
<b>Date of entering into force:</b>	24.12.1974 (last amended 16.09.2017)
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	Habitats Directive, Birds Directive
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Obligatory
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	Most important is §5 of this act: it regulates the „good agricultural practice“. Nature conservation issues have to be integrated in the common agricultural practice
<b>Sustainability objective mainly addressed:</b>	Agricultural production

<b>Impact on environmental sustainability aspects:</b>	Protection of biotopes, protection of greenland, preservation of soil, water, flora and fauna
<b>Impact on economic sustainability aspects:</b>	Site-specific agricultural production
<b>Impact on societal sustainability aspects:</b>	Preservation of agricultural resources
<b>Authority in charge of execution and / or certification:</b>	Federal Agency of Nature Conservation
<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	Agricultural producers
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	Biomass cultivation, harvest
<b>Level of direct addressing of transport modes:</b>	n/a
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Domestic
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	Neutral
<b>Limitations and shortcomings:</b>	n/a
<b>Any other comments:</b>	n/a
<b>Data source (Link, legal text, date, etc.)</b>	<a href="https://www.gesetze-im-internet.de/bnatschg_2009/">https://www.gesetze-im-internet.de/bnatschg_2009/</a>

## National sustainability schemes on bioenergy products (solid, liquid)

**Table 41: Ordinance on the Generation of Electricity from Biomass**

<b>Title of the scheme in English:</b>	Ordinance on the Generation of Electricity from Biomass
<b>Title of the scheme in original language:</b>	Biomasseverordnung (BiomasseV)
<b>Current status (in force, planned, abandoned):</b>	In force
<b>Date of entering into force:</b>	28.06.2001 (amended 01.01.2012)
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	2009/28/EC
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Obligatory
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	The ordinance regulates which substances are regarded as biomass, which technical methods are used and which environmental requirements have to be met in the generation of electricity from biomass.
<b>Sustainability objective mainly addressed:</b>	Biomass production
<b>Impact on environmental sustainability aspects:</b>	Sustainable production of biomass, conservation of resources
<b>Impact on economic sustainability aspects:</b>	Sustainable production requirements have to be met
<b>Impact on societal sustainability aspects:</b>	n/a
<b>Authority in charge of execution and/or certification:</b>	Federal Ministry for the Environment, Nature Conservation and Nuclear Safety

<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	Biomass producers, plant operators
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	Biomass cultivation, processing, deployment
<b>Level of direct addressing of transport modes:</b>	n/a
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Domestic
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	Stimulating
<b>Limitations and shortcomings:</b>	n/a
<b>Any other comments:</b>	n/a
<b>Data source (Link, legal text, date, etc.)</b>	<a href="https://s2biom.vito.be/node/923">https://s2biom.vito.be/node/923</a> <a href="http://www.gesetze-im-internet.de/biomassev/">http://www.gesetze-im-internet.de/biomassev/</a>

**Table 42: Immission Control Act - Ordinance on small & medium-sized combustion plants**

<b>Title of the scheme in English:</b>	Federal Immission Control Act - Ordinance on small and medium-sized combustion plants
<b>Title of the scheme in original language:</b>	Erste Verordnung zur Durchführung des Bundes-Immissionsschutzgesetzes
<b>Current status (in force, planned, abandoned):</b>	In force
<b>Date of entering into force:</b>	01.10.1974 (last amendment: 22.03.2010)
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	n/a
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Obligatory
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	The Regulation contains a list of feedstocks which may be used in small- and medium sized boilers. Also the thresholds for certain emissions and the efficiency of the applications are included.
<b>Sustainability objective mainly addressed:</b>	Reduce emissions
<b>Impact on environmental sustainability aspects:</b>	Reduce atmospheric load
<b>Impact on economic sustainability aspects:</b>	Only suitable feedstock can be used
<b>Impact on societal sustainability aspects:</b>	n/a
<b>Authority in charge of execution and/or certification:</b>	Ministry for the Environment, Nature Conservation, Building and Nuclear Safety
<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	Plant operators
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	Processing and deployment

<b>Level of direct addressing of transport modes:</b>	n/a
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Domestic
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	Neutral
<b>Limitations and shortcomings:</b>	n/a
<b>Any other comments:</b>	n/a
<b>Data source (Link, legal text, date, etc.)</b>	<a href="https://s2biom.vito.be/node/935">https://s2biom.vito.be/node/935</a> <a href="http://www.gesetze-im-internet.de/bimschv_1_2010/index.html">http://www.gesetze-im-internet.de/bimschv_1_2010/index.html</a>

**Table 43: Federal Immission Control Act**

<b>Title of the scheme in English:</b>	Federal Immission Control Act - Act on protection against harmful effects of air pollution, noise, vibration and similar phenomena
<b>Title of the scheme in original language:</b>	Bundes-Immissionsschutzgesetz - Gesetz zum Schutz vor schädlichen Umwelteinwirkungen durch Luftverunreinigungen, Geräusche, Erschütterungen und ähnliche Vorgänge
<b>Current status (in force, planned, abandoned):</b>	In force
<b>Date of entering into force:</b>	15.03.1974 (Last amendment: 2017)
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	n/a
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Obligatory
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	Harmful environmental effects due to emissions in air, water and soil, including waste management, have to be avoided and reduced. Furthermore a minimum share of biofuels in transport sector and requirements for biofuels are determined.
<b>Sustainability objective mainly addressed:</b>	Utilization of biofuels and air emissions
<b>Impact on environmental sustainability aspects:</b>	Reduce emissions and environmental risks
<b>Impact on economic sustainability aspects:</b>	No direct impact
<b>Impact on societal sustainability aspects:</b>	Reduce environmental risks
<b>Authority in charge of execution and/or certification:</b>	Customs/Zoll (Biokraftstoffquotenbehörde - Biofuel Quota Authority)
<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	Agricultural producers, plant operators, fuel producers
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	Processing, distribution, deployment
<b>Level of direct addressing of transport modes:</b>	Transport with biofuels is regulated

<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Domestic
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	Stimulating
<b>Limitations and shortcomings:</b>	n/a
<b>Any other comments:</b>	n/a
<b>Data source (Link, legal text, date, etc.)</b>	<a href="https://s2biom.vito.be/node/931">https://s2biom.vito.be/node/931</a> <a href="http://www.gesetze-im-internet.de/bimschg/index.html">http://www.gesetze-im-internet.de/bimschg/index.html</a>

Table 44: Biofuel Quota Act

<b>Title of the scheme in English:</b>	Biofuel Quota Act
<b>Title of the scheme in original language:</b>	Biokraftstoffquotengesetz (BiokraftQuG)
<b>Current status (in force, planned, abandoned):</b>	In force
<b>Date of entering into force:</b>	01.01.2007 (Last amendment: 2009)
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	2003/30/EG, 2003/96/EG, 98/34/EG
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Obligatory
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	The Biofuels Quota Act of 01.01.2007 declares to add a certain percentage of biofuels to all petrol and diesel fuels placed on the market.
<b>Sustainability objective mainly addressed:</b>	Biofuels
<b>Impact on environmental sustainability aspects:</b>	Climate protection, reduction of the combustion of mineral fuels
<b>Impact on economic sustainability aspects:</b>	Act has to be considered when producing fuel
<b>Impact on societal sustainability aspects:</b>	Reduce environmental risks
<b>Authority in charge of execution and/or certification:</b>	Customs/Zoll (Biokraftstoffquotenbehörde - Biofuel Quota Authority)
<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	Fuel producers
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	Processing, distribution, deployment
<b>Level of direct addressing of transport modes:</b>	n/a
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Domestic and imported biofuels
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	Stimulating
<b>Limitations and shortcomings:</b>	n/a
<b>Any other comments:</b>	n/a



<b>Data source (Link, legal text, date, etc.)</b>	<a href="https://s2biom.vito.be/node/930">https://s2biom.vito.be/node/930</a> <a href="https://www.bgbl.de">https://www.bgbl.de</a> <a href="http://www.buzer.de/gesetz/7519/index.htm">http://www.buzer.de/gesetz/7519/index.htm</a>
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**Table 45: Biofuel Sustainability Regulation**

<b>Title of the scheme in English:</b>	Biofuel Sustainability Regulation
<b>Title of the scheme in original language:</b>	Biokraftstoff-Nachhaltigkeitsverordnung
<b>Current status (in force, planned, abandoned):</b>	In Force
<b>Date of entering into force:</b>	02.11.2009 (Last amendment: 2015)
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	2003/30/EC
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Obligatory
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	The Biofuels Sustainability Regulation is intended to ensure the sustainability of biofuel production. For this reason only biofuels are calculated for the biofuel quotas, which meet certain requirements for environmental protection and sustainable agriculture. Biofuels that do not meet these sustainability standards can neither be tax-favored nor attributed to the biofuels quote.
<b>Sustainability objective mainly addressed:</b>	Biofuels, biomass production
<b>Impact on environmental sustainability aspects:</b>	Sustainable production of biomass and biofuels under guarantee that no environmental harm is generated
<b>Impact on economic sustainability aspects:</b>	Biofuels that do not meet these sustainability standards cannot be tax-favored
<b>Impact on societal sustainability aspects:</b>	Reduce environmental risks
<b>Authority in charge of execution and/or certification:</b>	Customs/Zoll (Biokraftstoffquotenbehörde - Biofuel Quota Authority)
<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	Fuel producers
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	Processing, distribution, deployment
<b>Level of direct addressing of transport modes:</b>	n/a
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Domestic and imported biofuels
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	Neutral (depending on type of final biofuel product)
<b>Limitations and shortcomings:</b>	n/a
<b>Any other comments:</b>	n/a
<b>Data source (Link, legal text, date, etc.)</b>	<a href="https://s2biom.vito.be/node/933">https://s2biom.vito.be/node/933</a> <a href="http://www.gesetze-im-internet.de/biokraft-nachv/">http://www.gesetze-im-internet.de/biokraft-nachv/</a>

**Table 46: Renewable Energy Sources Act**

<b>Title of the scheme in English:</b>	Renewable Energy Sources Act
<b>Title of the scheme in original language:</b>	Erneuerbare-Energien-Gesetz (EEG)
<b>Current status (in force, planned, abandoned):</b>	In force
<b>Date of entering into force:</b>	29.03.2000 (last amended: 13.10.2016)
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	2009/28/EC
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Voluntary
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	The EEG has existed since April 2000 and has been continuously developed since then. It remains the central control instrument for the expansion of renewable energies. The aim of the EEG is to transform the energy supply and to increase the share of renewable energies in the field of power supply at least 80% by 2050.
<b>Sustainability objective mainly addressed:</b>	Energy supply from alternative resources
<b>Impact on environmental sustainability aspects:</b>	Enable sustainable energy supply
<b>Impact on economic sustainability aspects:</b>	Funding possibilities, job creation, energy security
<b>Impact on societal sustainability aspects:</b>	Funding possibilities, job creation
<b>Authority in charge of execution and/or certification:</b>	Federal Ministry for the Environment, Nature Conservation and Nuclear Safety
<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	Industry, agricultural producers, population/end users in general
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	Processing and deployment
<b>Level of direct addressing of transport modes:</b>	n/a
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Domestic
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	Stimulating
<b>Limitations and shortcomings:</b>	n/a
<b>Any other comments:</b>	n/a
<b>Data source (Link, legal text, date, etc.)</b>	<a href="https://s2biom.vito.be/node/922">https://s2biom.vito.be/node/922</a> <a href="https://www.gesetze-im-internet.de/eeg_2014/">https://www.gesetze-im-internet.de/eeg_2014/</a>

**Table 47: Renewable Energies Heat Act**

<b>Title of the scheme in English:</b>	Renewable Energies Heat Act
<b>Title of the scheme in original language:</b>	Erneuerbare Energien Wärmegesetz (EEWärmeG)
<b>Current status (in force, planned, abandoned):</b>	In force
<b>Date of entering into force:</b>	07.08.2008 (last amended: 20.10.2015)
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	2009/28/EC

<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Voluntary
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	The EEWärmeG aims to facilitate a sustainable development of energy supply and further development of technologies generating heat from renewable energy sources.
<b>Sustainability objective mainly addressed:</b>	Heat supply from alternative resources
<b>Impact on environmental sustainability aspects:</b>	Development of renewable resources
<b>Impact on economic sustainability aspects:</b>	Funding possibilities
<b>Impact on societal sustainability aspects:</b>	Development of renewable resources
<b>Authority in charge of execution and/or certification:</b>	Federal Ministry for the Environment, Nature Conservation and Nuclear Safety
<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	Industry, agricultural producers, population/end users in general
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	Processing and deployment
<b>Level of direct addressing of transport modes:</b>	n/a
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Domestic
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	Stimulating
<b>Limitations and shortcomings:</b>	n/a
<b>Any other comments:</b>	n/a
<b>Data source (Link, legal text, date, etc.):</b>	<a href="https://s2biom.vito.be/node/927">https://s2biom.vito.be/node/927</a> <a href="http://www.gesetze-im-internet.de/eew_rmeg/">http://www.gesetze-im-internet.de/eew_rmeg/</a>

## Public and private certification schemes, labels, standardization norms etc. for sustainability of biomass and bioenergy

Table 48: ISCC Certificate

<b>Title of the scheme in English:</b>	ISCC Certificate
<b>Title of the scheme in original language:</b>	ISCC DE Zertifikat
<b>Current status (in force, planned, abandoned):</b>	In force
<b>Date of entering into force:</b>	2010
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	COM 2010/C60/01
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Voluntary
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	ISCC is a global certification scheme for all kind of feedstocks and markets. It covers the whole supply chain and it ensures that biomass is produced under

	sustainable conditions. This certificate is approved by the Federal Office for Agriculture and Food.
<b>Sustainability objective mainly addressed:</b>	Biomass, biogenic waste and residues, biofuels
<b>Impact on environmental sustainability aspects:</b>	Sustainable supply of biomass, biogenic waste and residues
<b>Impact on economic sustainability aspects:</b>	Only certified biomass, biogenic waste and residues may be used
<b>Impact on societal sustainability aspects:</b>	Preservation of agricultural sites and sustainable use of biomass and biogenic waste/ residues
<b>Authority in charge of execution and/or certification:</b>	ISCC certification bodies
<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	Biomass producers
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	Biomass cultivation, processing
<b>Level of direct addressing of transport modes:</b>	To a minor extent
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Domestic and imported
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	Stimulating
<b>Limitations and shortcomings:</b>	n/a
<b>Any other comments:</b>	n/a
<b>Data source (Link, legal text, date, etc.)</b>	<a href="http://www.pcu-deutschland.de/iscc-standard-zertifizierung-kontrollstelle">http://www.pcu-deutschland.de/iscc-standard-zertifizierung-kontrollstelle</a> <a href="https://www.iscc-system.org/certificates/all-certificates/">https://www.iscc-system.org/certificates/all-certificates/</a>

Table 49: RedCert

<b>Title of the scheme in English:</b>	RedCert
<b>Title of the scheme in original language:</b>	RedCert
<b>Current status (in force, planned, abandoned):</b>	In Force
<b>Date of entering into force:</b>	2010
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	COM 2010/C60/01
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Voluntary
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	RedCert is an European certification scheme for all kind of feedstocks. It covers the whole supply chain and it ensures that biomass is produced under sustainable conditions. This certificate is approved by the Federal Office for Agriculture and Food.
<b>Sustainability objective mainly addressed:</b>	Biomass, biogenic waste and residues, biofuels
<b>Impact on environmental sustainability aspects:</b>	Sustainable supply of biomass, biogenic waste and residues

<b>Impact on economic sustainability aspects:</b>	Only certified biomass, biogenic waste and residues may be used
<b>Impact on societal sustainability aspects:</b>	Preservation of agricultural sites and sustainable use of biomass and biogenic waste/ residues
<b>Authority in charge of execution and/or certification:</b>	n/a
<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	Biomass producers
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	Biomass cultivation, processing
<b>Level of direct addressing of transport modes:</b>	n/a
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Domestic and imported
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	Stimulating
<b>Limitations and shortcomings:</b>	n/a
<b>Any other comments:</b>	n/a
<b>Data source (Link, legal text, date, etc.)</b>	<a href="https://www.redcert.org/de/wir-ueber-uns.html">https://www.redcert.org/de/wir-ueber-uns.html</a>

## Other

**Table 50: Joint Task on Agricultural Structures and Coastal Protection**

<b>Title of the scheme in English:</b>	Joint Task on Agricultural Structures and Coastal Protection
<b>Title of the scheme in original language:</b>	GAK Gemeinschaftsaufgabe Agrarstruktur und Küstenschutz
<b>Current status (in force, planned, abandoned):</b>	In force
<b>Date of entering into force:</b>	1973 (Last amendment: 2014)
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	Cross-Compliance
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Funding Programme
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	Funding programme to support development of agriculture and rural areas
<b>Sustainability objective mainly addressed:</b>	Agriculture, forestry, rural development
<b>Impact on environmental sustainability aspects:</b>	Sustainable development and management of agricultural sites, forestry sites, coastal and rural areas
<b>Impact on economic sustainability aspects:</b>	Funding
<b>Impact on societal sustainability aspects:</b>	Funding opportunity for farmers
<b>Authority in charge of execution and/or certification:</b>	Federal Ministry of Food and Agriculture

<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	Agricultural producers
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	Biomass cultivation, harvest
<b>Level of direct addressing of transport modes:</b>	n/a
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Domestic
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	Stimulating
<b>Limitations and shortcomings:</b>	n/a
<b>Data source (Link, legal text, date, etc.)</b>	<a href="https://s2biom.vito.be/node/2430">https://s2biom.vito.be/node/2430</a> <a href="http://www.bmel.de/DE/Landwirtschaft/Foerderung-Agrarsozialpolitik/GAK/gak_node.html">http://www.bmel.de/DE/Landwirtschaft/Foerderung-Agrarsozialpolitik/GAK/gak_node.html</a>

**Table 51: Market Incentive Programme**

<b>Title of the scheme in English:</b>	Market Incentive Programme
<b>Title of the scheme in original language:</b>	Marktanreizprogramm
<b>Current status (in force, planned, abandoned):</b>	In force
<b>Date of entering into force:</b>	2000
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	No direct relation
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Voluntary scheme
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	<p>The Market Incentive Programme ('Marktanreizprogramm', MAP) is an integral part of the EEWärmeG and has become a central funding instrument for heat supply from renewable energies. The programme offers support for the use of renewable energy sources for heat:</p> <ul style="list-style-type: none"> <li>• the installation of solar collector systems</li> <li>• small systems for solid biomass heat production</li> <li>• photovoltaic systems at schools and universities</li> <li>• biogas systems</li> <li>• large biomass systems</li> <li>• hydro systems</li> <li>• deep geothermal systems</li> </ul>
<b>Sustainability objective mainly addressed:</b>	Heat supply from renewable resources
<b>Impact on environmental sustainability aspects:</b>	Increase in utilization of biobased energy
<b>Impact on economic sustainability aspects:</b>	Energy security
<b>Impact on societal sustainability aspects:</b>	Funding options
<b>Authority in charge of execution and/or certification:</b>	KfW promotional bank, Federal Office of Economics and Export Control (BAFA)

<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	End users
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	Processing, deployment
<b>Level of direct addressing of transport modes:</b>	n/a
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Domestic
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	Stimulating
<b>Limitations and shortcomings:</b>	n/a
<b>Data source (Link, legal text, date, etc.)</b>	<a href="http://www.bmub.bund.de/themen/klima-energie/energieeffizienz/foerdermittelberatung/foerdermoeglichkeiten/#c31197">http://www.bmub.bund.de/themen/klima-energie/energieeffizienz/foerdermittelberatung/foerdermoeglichkeiten/#c31197</a>

### **Assessment of existing sustainability framework conditions along biomass and bioenergy supply chains**

Often, renewable energy sources including bioenergy are considered entirely as sustainable as they do not contribute to the depletion of fossil resources. However, also biobased resources, irrespective of their final path of consumption (food, feed, material used, energetic use) have to be managed in such a manner as they will be available in healthy and sufficient quantities and quality for future generations in order to keep in line with the very definition of sustainability. Therefore, as becomes visible in the list of the framework conditions Germany has set along the biomass and bioenergy value chain, binding and voluntary regulations have to be in place. These regulative schemes cover thus:

- a) the overall stimulation of utilization of biobased resources for energy generation in order to increase energy security and environmentally and climate friendly energy supply, and
- b) the sustainability aspects the feedstock for the bioenergy produced or the bioenergy product (or its performance) itself have to meet.

Most of these schemes are in line with the regulatory framework set by the EU. In Germany, currently all EU directives on biomass and bioenergy sustainability have been translated into national legislation or are covered by voluntary schemes. Therefore, it can be said that the level of EU legislation enforcement, binding character and legislative deepness are comparatively high. This does however not automatically imply that the sustainability framework conditions in Germany are entirely effective in the sense of ensuring all three sustainability pillars. Although most schemes listed above address environmental sustainability, for example solid biomass for



energetic purposes, in comparison to liquid biofuels, is currently not regulated under a comprehensive, EU-wide sustainability regime. There are a number of voluntary private sector certification schemes in place which focus on sustainability, also covering solid biomass and residue material, e.g. REDCert and ISCC as well as PEFC (Programme for the Endorsement of Forest Certification Schemes), as well as for example quality assurance schemes such as the ENplus scheme focussing on quality for woody bioenergy carrier supply chains. However, private actors have to decide for themselves to be certified under these schemes, organizing certification procedures as well as audits themselves. An aspect contributing to a harmonization of geographical coverage of biomass sustainability in these certification schemes is their consideration of both domestic and imported biomass. In case a scheme only considers domestically produced biomass, there is a risk of importing sustainability hazards from abroad, e.g. biomass which is the result of direct or indirect land use change or has been produced from biomass meant for food and feed production.

Considering the supply chain, the coverage of both the German bioenergy-stimulating and the sustainability-enforcing frameworks are quite evenly addressing all elements of the chain, starting from cultivation and harvest, over processing to deployment. This results in the fact that actors along this chain are responsible for ensuring biomass and bioenergy sustainability in theory, enabling a burden sharing among the actors. Hence, in theory no massive market-inhibiting effect should occur.

A number of the schemes listed above regulating sustainability aspects in environmental protection, agriculture and farming as well as other conservation aspects impact the bioenergy market in a more indirect way. These schemes however nevertheless are integral part of safeguarding environmental sustainability in all areas where human activities interfere with environmental ecosystem services. Overall and without a pure sustainability focus, however, the German bioenergy legislative landscape has been subject to numerous amendments and U-turns, resulting in fluctuating markets and entire branches under pressure (e.g. first generation biofuels, such as biodiesel). This phenomenon does not necessarily indicate a foresighted and in this sense sustainable handling of market incentive policies for a more climate-friendly energy system.

**Table 52: Assessment of biomass and bioenergy sustainability framework in Germany**

<b>Biomass and bioenergy sustainability framework in Germany: indicators for assessment</b>	<b>High / strict</b>	<b>Medium</b>	<b>Low</b>
Comprehensiveness of regulation regarding entire supply chain and possible bioenergy products		X	
Comprehensiveness of regulation regarding target groups		X	
Comprehensiveness of regulation regarding geographical scope (domestic & imported biomass and bioenergy products)		X	
Level of enforcement of existing EU directives	X		
Overall regulatory deepness	X		
Effectiveness in terms of binding character	X		
Effectiveness regarding environmental sustainability	X		
Effectiveness regarding societal sustainability		X	
Effectiveness regarding economic sustainability		X	

Level of stimulating impact on market uptake/demand		X	
Level of inhibiting impact on market uptake / demand			X

### **Recommendations for harmonization on national, Danube region and EU wide level**

As assessed above, the German framework conditions for ensuring biomass and bioenergy sustainability are generally quite elaborated and cover the supply chain in a representative manner. Also, the legally binding schemes are supplemented with a number of voluntary, private actor schemes which are in use and comparatively widespread.

Nevertheless, a number of recommendations can be formulated with respect to biomass and bioenergy sustainability and the ways this affects the functioning of the bioenergy market.

On national level, in order to ensure economic and societal sustainability along the bioenergy sector, policy makers shall conduct all future policy changes with far-sightedness and consideration of the actions that have been taken to stimulate (and inhibit) the markets in the past. This recommendation also pertains to the Danube as well as overall EU level in a way that only stable and reliable political frameworks within which biomass is sustainably used to generate sustainable bioenergy allow this sector (as well as an emerging bioeconomy sector) to perform as an important economic pillar for rural regions and decentralized energy security, for example in the Danube region countries where a functioning, modern, sustainable and efficient bioenergy market still has the potential to develop and prosper.

Valid for all three levels (German, Danube-wide and EU-wide) is the recommendation to follow through on the plans established on EU level in 2016 (European Commission, 2017b) and to pass a directive regulating sustainability standards for solid biomass (both going into the energetic and the material utilization sectors) in parallel to the already existing schemes for liquid biofuels. Only this way, market distortions can be avoided between the different sectors and environmental sustainability throughout all sectors is ensured.

Looking at the overall European level, all member states should be asked to swiftly and thoroughly ensure that EU level directives are being transposed into national law or frameworks and are being effectively enforced there. Only this way, EU wide environmentally, societally and economically sustainable utilization of biomass for bioenergy purposes can be ensured. Such a measure could also stimulate EU-internal (e.g. Danube region internal) biomass trade.

Related to this, an EU-wide harmonized, binding regime on sustainability for biomass and bioenergy carrier imports should be established, using instruments facilitated by international organizations such as the Food and Agriculture Organization of the United Nations (FAO) or the International Renewable Energy Agency (IRENA). This scheme should address importing traders as well as processors and end users.

## **5.5 Hungary**

### **List of existing sustainability framework conditions (hyperlinks):**

- [35/2017. \(VI.9\) Government Decree on woody plantations](#)

- Act No. XXXVII of 2009 on the protection and management of forests
- Sustainability requirements & certification of biofuels and liquid bio-energy carriers
- Act concerning promotion of renewable energy for transport
- Decree on the extent of operational support for renewable electricity
- Emission standards for combustion plants with capacity between 140 kWt - 50 MWt
- Decree on emission limit values for air pollutants of combustion plants
- Act No. XL of 2008 on natural gas supply
- Decree on obligatory dispatch/purchase of electricity from waste, RES & CHP
- Act No. LXXXVI of 2007 on Electric Energy
- Solid biofuels Fuel specifications Pt.1: General requirements (ISO17225-1:2014)

## National sustainability schemes on biomass feedstock (solid, liquid)

Table 53: 35/2017. (VI.9) Government Decree on woody plantations

<b>Title of the scheme in English:</b>	35/2017. (VI.9) Government Decree on woody plantations
<b>Title of the scheme in original language:</b>	135/2017. (VI. 9.) Korm. rendelet a fás szárú ültetvényekről
<b>Current status (in force, planned, abandoned):</b>	In force
<b>Date of entering into force:</b>	18.06.2017
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	No relation
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Obligatory
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	The decree defines the rules of the plantation, registration, harvesting and elimination in wood plantations that can be used.
<b>Sustainability objective mainly addressed:</b>	Environmental sustainability of wood plantations
<b>Impact on environmental sustainability aspects:</b>	The decree defines the appropriate way of planting, and in which areas planting activities are not permitted.
<b>Impact on economic sustainability aspects:</b>	Support for planting of industrial woody plantations is available; the use of the funding for afforestation will be more widespread
<b>Impact on societal sustainability aspects:</b>	No direct impact
<b>Authority in charge of execution and/or certification:</b>	Forestry authority with territorial jurisdiction
<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	Biomass suppliers
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	Biomass cultivation, harvest
<b>Level of direct addressing of transport modes:</b>	Neutral

<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Domestic
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	Stimulating
<b>Limitations and shortcomings:</b>	None
<b>Any other comments:</b>	n/a
<b>Data source (Link, legal text, date, etc.)</b>	<a href="https://net.jogtar.hu">https://net.jogtar.hu</a>

**Table 54: Act No. XXXVII of 2009 on the protection and management of forests**

<b>Title of the scheme in English:</b>	Act No. XXXVII of 2009 on forests, on the protection and management of forests
<b>Title of the scheme in original language:</b>	2009. évi XXXVII. törvény az erdőről, az erdő védelméről és az erdőgazdálkodásról
<b>Current status (in force, planned, abandoned):</b>	In force
<b>Date of entering into force:</b>	25.05.2009 The consolidated version entered into force on 23.05.2013.
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	No relation
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Obligatory
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	This Act provides a comprehensive frame for forestry management and forest protection. It is considered as one of the most rigorous forest acts in Europe concerning the wood tracking system to reduce illegal logging. The objective of the Act is, through the regulation of the relation between forests and the society, and, in particular, through the determination of sustainable requirements of forest management, to assure the maintenance, the protection, the growth, and the increase of its positive effects on the environment, the society and the economy.
<b>Sustainability objective mainly addressed:</b>	Promoting sustainable forest management
<b>Impact on environmental sustainability aspects:</b>	Active nature conservation in the framework of sustainable forest management, preserving biodiversity, the soil, the protection of agricultural land to provide wood as a source of renewable energy and raw materials,
<b>Impact on economic sustainability aspects:</b>	Forestry that creates jobs and contributes to the population's conservation power. The Government intends to increase the proportion of forest areas to 27% by 2030 by implementing the National Forest Strategy.
<b>Impact on societal sustainability aspects:</b>	Rural development, the role of forestry in the rural economy, as well as the expansion of forestry employment opportunities
<b>Authority in charge of execution and/or certification:</b>	Forestry authority
<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	Biomass suppliers, processors

<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	Biomass cultivation, harvest, transport, processing
<b>Level of direct addressing of transport modes:</b>	Partly, for the storing, transporting and placing on the market of wood
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Domestic
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	Stimulating
<b>Limitations and shortcomings:</b>	None
<b>Any other comments:</b>	n/a
<b>Data source (Link, legal text, date, etc.):</b>	<a href="https://net.jogtar.hu">https://net.jogtar.hu</a>

**Table 55: Sustainability requirements & certification of biofuels and liquid bio-energy carriers**

<b>Title of the scheme in English:</b>	279/2017. (IX.22.) Government decree on the sustainability requirements and certification of biofuels and liquid bio-energy carriers
<b>Title of the scheme in original language:</b>	279/2017. (IX. 22.) Korm. rendelet a bioüzemanyagok és folyékony bioenergiahordozók fenntarthatósági követelményeiről és igazolásáról
<b>Current status (in force, planned, abandoned):</b>	In force
<b>Date of entering into force:</b>	September 2017
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	This Regulation is intended to comply with the followings: <ul style="list-style-type: none"> <li>• 98/70 / EC</li> <li>• 2009/28/EC</li> <li>• 2009/30/EC</li> <li>• 2015/1513 of the European Parliament and of the Council</li> </ul>
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Obligatory
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	The government decree defines the requirements for the sustainable production, the certification, the compulsory biofuel share, the monitoring and reporting issues of the volume of biofuels and liquid bioenergy carriers are placed on the market.
<b>Sustainability objective mainly addressed:</b>	Sustainable biofuel production
<b>Impact on environmental sustainability aspects:</b>	By the requirements for the sustainable production of biofuels and liquid biofuels
<b>Impact on economic sustainability aspects:</b>	Increased utilization of sustainable liquid biofuels reducing energy dependency
<b>Impact on societal sustainability aspects:</b>	Less dependence on fossil fuels
<b>Authority in charge of execution and/or certification:</b>	The National Food Chain Safety Office
<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	Producers, end users

<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	Deployment of bioenergy
<b>Level of direct addressing of transport modes:</b>	Medium, by compulsory biofuel blending
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Domestic
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	Stimulating
<b>Limitations and shortcomings:</b>	None
<b>Any other comments:</b>	n/a
<b>Data source (Link, legal text, date, etc.)</b>	<a href="https://net.jogtar.hu">https://net.jogtar.hu</a>

## National sustainability schemes on bioenergy products (solid, liquid)

Table 56: Act concerning promotion of renewable energy for transport

<b>Title of the scheme in English:</b>	Act No. CXVII of 2010 concerning the promotion of the use of renewable energy for transport and the greenhouse effect reduction of energy used for transport purposes
<b>Title of the scheme in original language:</b>	2010. évi CXVII. törvény a megújuló energia közlekedési célú felhasználásának előmozdításáról és a közlekedésben felhasznált energia üvegházhatású gázkibocsátásának csökkentéséről
<b>Current status (in force, planned, abandoned):</b>	In force
<b>Date of entering into force:</b>	15.04.2011
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	<ul style="list-style-type: none"> <li>• Directive 2003/30/EC of the European Parliament and the Council on the promotion of the use of biofuels or other renewable fuels for transport.</li> <li>• Directive 2009/28/EC of the European Parliament and of the Council on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC.</li> </ul>
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Obligatory
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	The purpose of this Act is to reduce the impact of climate change of the energy consumption of transportation activities and to respect the principles of sustainability during biofuel production. In the territory of the Republic of Hungary at least 10% of energy used for all types of transport must be produced from renewable sources by 2020.
<b>Sustainability objective mainly addressed:</b>	Reduce impact of climate change via renewable sources used in transport
<b>Impact on environmental sustainability aspects:</b>	Reduce impact of climate change via renewable sources used in transport
<b>Impact on economic sustainability aspects:</b>	Job creation on the countryside



<b>Impact on societal sustainability aspects:</b>	Less dependence on fossil fuel
<b>Authority in charge of execution and/or certification:</b>	Minister for Energy Policy
<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	Fuel producers, end users
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	Deployment of bioenergy
<b>Level of direct addressing of transport modes:</b>	High
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Domestic
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	Stimulating
<b>Limitations and shortcomings:</b>	None
<b>Any other comments:</b>	n/a
<b>Data source (Link, legal text, date, etc.):</b>	<a href="https://net.jogtar.hu">https://net.jogtar.hu</a>

**Table 57: Decree on the extent of operational support for renewable electricity**

<b>Title of the scheme in English:</b>	Decree of the Hungarian Energy and Public Utility Regulatory Authority No. 17/2016 (XII.21.) on the extent of operational support for renewable electricity
<b>Title of the scheme in original language:</b>	17/2016. (XII. 21.) MEKH rendelet a megújuló energiaforrásból termelt villamos energia működési támogatásának mértékéről
<b>Current status (in force, planned, abandoned):</b>	In force
<b>Date of entering into force:</b>	01.01.2017
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	RED (Renewable Energy Directive).
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Obligatory
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	The key feature of the new support scheme (METÁR), is that producers of renewable energy receive the aid as a paid premium over the market reference price (e.g. the average price of the regulated market). The producers of electric energy are classified into three different categories, depending on the performance and the type of generation power plants. Apart from the above green premium system, METÁR also introduces the so-called "brown premium" to promote the generation of electricity from biomass or biogas sources.
<b>Sustainability objective mainly addressed:</b>	Providing sustainable renewable energy sources; support schemes for owners, operators, farmers
<b>Impact on environmental sustainability aspects:</b>	It may help to create new projects due to the predictable feed-in tariffs. Maintenance of existing plants



	Environmentally-friendly, renewable energy production units
<b>Impact on economic sustainability aspects:</b>	Support for renewable electricity, job creation
<b>Impact on societal sustainability aspects:</b>	job creation; environmental protection supporting societal effects of an intact environment
<b>Authority in charge of execution and/or certification:</b>	The Hungarian Energy and Utility Regulatory Authority
<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	Energy producers
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	Processing, deployment of bioenergy
<b>Level of direct addressing of transport modes:</b>	Low (in the future this may be enhanced by the spread of biomethane)
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Domestic
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	Stimulating
<b>Limitations and shortcomings:</b>	None
<b>Any other comments:</b>	n/a
<b>Data source (Link, legal text, date, etc.)</b>	<a href="https://net.jogtar.hu">https://net.jogtar.hu</a>

**Table 58: Emission standards for combustion plants with capacity between 140 kWt - 50 MWt**

<b>Title of the scheme in English:</b>	The emission standards for combustion plants with capacity between 140 kWt and 50 MWth are set in Regulation No. 23/2001 (XI.13) KöM
<b>Title of the scheme in original language:</b>	23/2001. (XI. 13.) KöM rendelet a 140 kWth és az ennél nagyobb, de 50 MWth-nál kisebb névleges bemenő hőteljesítményű tüzelőberendezések légszennyező anyagainak technológiai kibocsátási határértékeiről
<b>Current status (in force, planned, abandoned):</b>	In force
<b>Date of entering into force:</b>	2001
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	No relation
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Obligatory
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	The scope of this Decree covers all stationary combustion systems with nominal thermal input performance between 140 kWth and 50 MWth.
<b>Sustainability objective mainly addressed:</b>	Emission control
<b>Impact on environmental sustainability aspects:</b>	Technological emission limit values for combustion plants with solid fuels, liquid fuels, gaseous

<b>Impact on economic sustainability aspects:</b>	Domestic boiler manufacturers can benefit from the development
<b>Impact on societal sustainability aspects:</b>	None
<b>Authority in charge of execution and/or certification:</b>	Job creation
<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	End users
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	Deployment of bioenergy
<b>Level of direct addressing of transport modes:</b>	n/a
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Domestic
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	n/a
<b>Limitations and shortcomings:</b>	None
<b>Any other comments:</b>	n/a
<b>Data source (Link, legal text, date, etc.)</b>	<a href="https://net.jogtar.hu">https://net.jogtar.hu</a>

**Table 59: Decree on emission limit values for air pollutants of combustion plants**

<b>Title of the scheme in English:</b>	Decree No. 110/2013 (XII. 4.) VM of the Ministry of Rural Development concerning operational conditions and emission limit values for air pollutants of combustion plants, the nominal total rated thermal input of which is equal to or greater than 50 MW
<b>Title of the scheme in original language:</b>	110/2013. (XII. 4.) VM rendelet az 50 MW <sub>th</sub> és annál nagyobb teljes névleges bemenő hőteljesítményű tüzelőberendezések működési feltételeiről és légszennyező anyagainak kibocsátási határértékeiről
<b>Current status (in force, planned, abandoned):</b>	In force
<b>Date of entering into force:</b>	First entry into force on 12.12.2013. The consolidated version entered into force on 02.01.2016.
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	Directive 2010/75/EU of the European Parliament and the Council on industrial emissions (integrated pollution prevention and control)
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Obligatory
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	This Decree lays down rules regarding the construction, establishment, operation of combustion plants, the emissions of pollutants and operation of such plants.
<b>Sustainability objective mainly addressed:</b>	Environmental sustainability, emission controls
<b>Impact on environmental sustainability aspects:</b>	Technological emission limit values for combustion plants with solid fuels, liquid fuels, gaseous

<b>Impact on economic sustainability aspects:</b>	Domestic boiler manufacturers can benefit from the development
<b>Impact on societal sustainability aspects:</b>	None
<b>Authority in charge of execution and/or certification:</b>	Environmental authority Shall be verified by a measuring organization as defined in the Ministerial Decree
<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	End users
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	Deployment of bioenergy
<b>Level of direct addressing of transport modes:</b>	n/a
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Domestic
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	Stimulating
<b>Limitations and shortcomings:</b>	None
<b>Any other comments:</b>	n/a
<b>Data source (Link, legal text, date, etc.)</b>	<a href="https://net.jogtar.hu">https://net.jogtar.hu</a>

**Table 60: Act No. XL of 2008 on natural gas supply**

<b>Title of the scheme in English:</b>	Act No. XL of 2008 on natural gas supply
<b>Title of the scheme in original language:</b>	2008. évi XL. törvény a földgázellátásról
<b>Current status (in force, planned, abandoned):</b>	In force
<b>Date of entering into force:</b>	The consolidated version of the Act and of the Decree entered into force on 1 January 2014.
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	Directive 2009/73/EC of the European Parliament and of the Council concerning common rules for the internal market in natural gas and repealing Directive 2003/55/EC.  Council Directive 2004/67/EC concerning measures to safeguard security of natural gas supply
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Obligatory
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	The purpose of this Act is: to create an efficient natural gas market; to exercise the principles of energy efficiency and conservation in the interest of sustainable development; to supply natural gas to the consumers in a safe and smooth way, of adequate quality and at a transparent price; to integrate the national natural gas market into EU markets.
<b>Sustainability objective mainly addressed:</b>	Environmental and economic sustainability

<b>Impact on environmental sustainability aspects:</b>	enforcing energy efficiency and energy saving principles for sustainable development
<b>Impact on economic sustainability aspects:</b>	Energy security; Developing a competitive natural gas market
<b>Impact on societal sustainability aspects:</b>	n/a
<b>Authority in charge of execution and/or certification:</b>	Hungarian Energy and Public Utility Regulatory Authority
<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	Natural gas suppliers
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	Deployment of bioenergy
<b>Level of direct addressing of transport modes:</b>	Partly, pipeline transport
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Domestic and imported
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	Stimulates market uptake of natural gas, not applying to biogas yet → inhibiting for biogas market
<b>Limitations and shortcomings:</b>	Not applied to biogas market yet – this should be changed
<b>Any other comments:</b>	n/a
<b>Data source (Link, legal text, date, etc.)</b>	<a href="https://net.jogtar.hu">https://net.jogtar.hu</a>

**Table 61: Decree on obligatory dispatch/purchase of electricity from waste, RES & CHP**

<b>Title of the scheme in English:</b>	Government Decree No. 389/2007 (XII.23.) on the obligatory dispatch and purchase of electricity generated from waste or from renewable energy sources and combined heat and power
<b>Title of the scheme in original language:</b>	(389/2007. (XII. 23.) Korm. rendelet a megújuló energia forrásból vagy hulladékból nyert energiával termelt villamos energia, valamint a kapcsoltn termelt villamos energia kötelező átvételéről és átvételi áráról
<b>Current status (in force, planned, abandoned):</b>	In force
<b>Date of entering into force:</b>	01.01.2008
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	2001/77/EC 2004/8/EC 2009/28/EC
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Legally binding
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	The Decree establishes a framework for the dispatch and payment of electricity generated from renewable energy sources and waste
<b>Sustainability objective mainly addressed:</b>	Environmental and economic sustainability
<b>Impact on environmental sustainability aspects:</b>	Utilization of renewable sources for energy generation; reducing the GHG emissions
<b>Impact on economic sustainability aspects:</b>	Supporting renewable projects Job creation

<b>Impact on societal sustainability aspects:</b>	Renewable energy production with competitive prices
<b>Authority in charge of execution and/or certification:</b>	Environmental authority
<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	Processors, end users
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	Processing, deployment of bioenergy
<b>Level of direct addressing of transport modes:</b>	n/a
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Domestic
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	Stimulating
<b>Limitations and shortcomings:</b>	None
<b>Any other comments:</b>	n/a
<b>Data source (Link, legal text, date, etc.):</b>	<a href="https://net.jogtar.hu">https://net.jogtar.hu</a>

Table 62: Act No. LXXXVI of 2007 on Electric Energy

<b>Title of the scheme in English:</b>	Act No. LXXXVI of 2007 on Electric Energy
<b>Title of the scheme in original language:</b>	2007. évi LXXXVI. törvény a villamos energiáról
<b>Current status (in force, planned, abandoned):</b>	In force
<b>Date of entering into force:</b>	15.10.2007
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	2009/72/EC 2004/8/EC 2009/28/EC 2012/27/EU
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Obligatory
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	Regulating the electricity market. One of the act's priorities is to promote the generation of electricity from renewable energy sources and waste.
<b>Sustainability objective mainly addressed:</b>	Economic and environmental sustainability
<b>Impact on environmental sustainability aspects:</b>	Utilization of renewable sources for energy generation
<b>Impact on economic sustainability aspects:</b>	Energy security
<b>Impact on societal sustainability aspects:</b>	n/a
<b>Authority in charge of execution and/or certification:</b>	Hungarian Energy and Public Utility Regulatory Authority
<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	No concrete target group

<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	Deployment of bioenergy
<b>Level of direct addressing of transport modes:</b>	None
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Domestic
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	Stimulating
<b>Limitations and shortcomings:</b>	None
<b>Any other comments:</b>	n/a
<b>Data source (Link, legal text, date, etc.)</b>	<a href="https://net.jogtar.hu">https://net.jogtar.hu</a>

## Public and private certification schemes, labels, standardization norms etc. for sustainability of biomass and bioenergy

**Table 63: Solid biofuels Fuel specifications Pt.1: General requirements (ISO17225-1:2014)**

<b>Title of the scheme in English:</b>	Solid biofuels. Fuel specifications and classes. Part 1: General requirements (ISO 17225-1:2014)
<b>Title of the scheme in original language:</b>	Szilárd bio-tüzelőanyagok. Tüzelőanyag-előírások és -osztályok. 1. rész: Általános követelmények (ISO 17225-1:2014)
<b>Current status (in force, planned, abandoned):</b>	In force
<b>Date of entering into force:</b>	01.09. 2014
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	ISO/TC 238; CEN/TC 335 Solid Biofuels
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Obligatory
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	This part of ISO 17225 determines the fuel quality classes and specifications for solid biofuels of raw and processed materials originating from a) forestry and arboriculture; b) agriculture and horticulture; c) aquaculture. Chemically treated materials may not include halogenated organic compounds or heavy metals at levels higher than those in typical virgin material values (see Annex B) or higher than typical values of the country of origin. NOTE Raw and processed material includes woody, herbaceous, fruit, aquatic biomass and biodegradable waste originating from above sectors.
<b>Sustainability objective mainly addressed:</b>	Environmental sustainability
<b>Impact on environmental sustainability aspects:</b>	Avoidance of toxic substances in solid biomass / bioenergy feedstock
<b>Impact on economic sustainability aspects:</b>	market regulation, providing the right raw material
<b>Impact on societal sustainability aspects:</b>	n/a
<b>Authority in charge of execution and/or certification:</b>	Hungarian Standards Institution

<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	Biomass processors and traders
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	Processing and/or deployment of bioenergy
<b>Level of direct addressing of transport modes:</b>	None
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Domestic
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	Stimulating
<b>Limitations and shortcomings:</b>	n/a
<b>Any other comments:</b>	<p>This standard only contains general requirements for solid biofuels.</p> <p>There are some other special related standards:</p> <p>ISO 17225-2:2014 Fuel specifications and classes for graded wood pellets</p> <p>ISO 17225-3:2014 Fuel specifications and classes for graded wood briquettes</p> <p>ISO 17225-4:2014 Fuel specifications and classes for graded wood chips</p> <p>ISO 17225-5:2014 Fuel specifications and classes for graded firewood</p> <p>ISO 17225-6:2014 Fuel specifications and classes for graded non-woody pellets</p> <p>ISO 17225-7:2014 Fuel specifications and classes for graded non-woody briquettes</p>
<b>Data source (Link, legal text, date, etc.)</b>	<a href="http://www.mszt.hu">http://www.mszt.hu</a>

### **Assessment of existing sustainability framework conditions along biomass and bioenergy supply chains**

The declared aim of Hungary is – as presented in the National Energy Strategy- to proceed towards a sustainable, low-carbon, energetically efficient economy. The main goal of the Energy Strategy is the decrease of energy dependency by energy efficiency, high ratio of renewable energy sources, nuclear energy and connecting to the European energy infrastructure. The main market regulatory body is the Hungarian Energy and Public Utility Regulatory Authority (MEKH), with the main task of license issue and ratification of grid fees for transmission and distribution system operators. Since the European Commission has published guidelines for state aid for environmental protection and energy 2014-2020 (2014/C 200/01) in 2014, EU member states are working towards new support mechanisms for renewable energy sources (EU Commission, 2017).

The main ideas of the guidelines were that future support for renewable energy producers should take the form of premiums rather than fixed support schemes and that mandatory tenders for new capacities should be developed beginning in 2017. Several policy changes recently have been



approved by the Hungarian government. It announced the Act CXXXVIII of 2016 which modified several climate policy and green industry development policies. Governmental Decree 393/2016 (XII. 5.) modified previous support schemes for renewable based electricity production. Decrees 17/2016 (XII. 21.) and 5/2016 (XII. 21.) approved by the Hungarian Energy and Public Utility Regulatory Authority and the Ministry for National Development (MND), respectively quantified the new premiums and the technical requirements for power plants. Details of the tendering and settlement processes were announced in MND Decrees 62/2016 and 63/2016 (XII. 28.).

Thus, newly introduced legislation has largely transformed the former support schemes for renewables. The relevant legislative framework is mostly aligned with the *acquis*, including provisions concerning sustainability criteria. Relevant Directives have been transposed in several national laws and by-laws, including: Act CXVII of 2010 on the promotion of the use of RES for transport purposes and on the reduction of greenhouse gas emissions from energy used in transport and Act XXIX of 2011 on the amendments of energy acts; Sustainability criteria have been transposed with GD343/2010; FQD has been transposed with GD 53/2014 (Directive 2015/652 is due to be transposed by September 2017); Certification of origin is regulated by GD 309/2013; the Ministry of National Development issued several Decrees regulating: the calculation of GHG emissions from biofuels and bioliquids (36/2010), the quality requirements for biofuels (30/2011), the calculation of the share of RES (1/2012); Direc5ve 2015/1513 (iLUC) has not yet been transposed; double counting is foreseen in Act CXVII. Some regulation currently in place are inhibiting for example the market competitiveness of renewable energy types such as biogas by favouring conventional national gas.

**Table 64: Assessment of biomass and bioenergy sustainability framework in Hungary**

<b>Biomass and bioenergy sustainability framework in Hungary: indicators for assessment</b>	<b>High / strict</b>	<b>Medium</b>	<b>Low</b>
Comprehensiveness of regulation regarding entire supply chain and possible bioenergy products		x	
Comprehensiveness of regulation regarding target groups		x	
Comprehensiveness of regulation regarding geographical scope (domestic & imported biomass and bioenergy products)		x	
Level of enforcement of existing EU directives	X		
Overall regulatory deepness	X		
Effectiveness in terms of binding character	X		
Effectiveness regarding environmental sustainability		x	
Effectiveness regarding societal sustainability		x	
Effectiveness regarding economic sustainability		x	
Level of stimulating impact on market uptake/demand		x	
Level of inhibiting impact on market uptake / demand			x

### **Recommendations for harmonization on national, Danube region and EU wide level**

The analyses on energy efficiency, renewable energy potentials, the resulting alternatives and sustainable energy scenarios clearly result in two different future energy paths for Hungary:

heavy investments into a strong expansion of renewable energy generation or concentrate on future investments in new nuclear as well as fossil power plants.

In case of the renewable energy scenario, the necessary investment will increase substantially as well, but stepwise. The bulk of all investments will occur in the period 2030-2050 due to the fact that investments will be in incremental steps and also gradually increase over time as exploitation rates of the potentials will increase together with lower costs of the technology. There is a need for clear political commitment to a comprehensive, sustainable energy transition, political endorsement of milestones as well as highly ambitious and optimally legally binding, national energy efficiency and renewable energy goals and targets in order to create clear signals and long term reliable conditions for investors. The required investments can be financed by domestic but also international funds. To achieve such a broad portfolio as needed for a widespread RES development, wide groups of investors should receive incentives. This should particularly include citizens and cooperatives as they guarantee high local involvement and a return of revenue into the regions where the RES generation takes place. Feed-in tariffs and other schemes are already well developed and explored. Such development, however, also needs the necessary planning regulations. This holds true even more for expansions of the electricity grid. Supporting provisions for these should be provided and regions as well as municipalities should participate and support local and regional developments.

In the case of solid biomass, the establishment of micro-region biomass logistic centers would be appropriate to meet seasonal uses. Temporary storage would be the responsibility of state forest management. It is also important to reduce illegal wood logging and trade. Only technologies which do not adversely affect the food chain can be supported. The production of liquid fuels can be subsidized where prices of the different raw materials are depressed.

It may be justified to provide non-refundable support for the renewal of existing biogas plants. Periodic test procedure for digestion from biogas plants should be applied uniformly in case of field application.

Particularly important is also the transport sector. Based on the currently rather low energy use in Hungary taxation of cars with rebates for environmentally-friendly, energy- efficient cars together with fuel taxes and other instruments could be used to maintain low levels of transport energy consumption. This should be complemented by a strong support for public transport as well as a future introduction of alternative fuels and particularly electric vehicles.

## 5.6 Romania

### **List of existing sustainability framework conditions (hyperlinks):**

- [Romanian Forest Code](#)
- [Law establishing a system for promoting renewable energy production](#)
- [Environmental Protection Law introduced by OUG 195/2005](#)
- [Energy Strategy of Romania 2016-2030, with the prospect of 2050](#)

- National Rural Development Program 2014-2020

## National sustainability schemes on biomass feedstock (solid, liquid)

Table 65: Romanian Forest Code

<b>Title of the scheme in English:</b>	Forest Code
<b>Title of the scheme in original language:</b>	Codul Silvic
<b>Current status (in force, planned, abandoned):</b>	In force
<b>Date of entering into force:</b>	2008, ammended in 2017
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	No direct relation
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Obligatory
<b>Brief description of content and objective, e.g. risks addressed (5-15 setences):</b>	<p>The Forest Code regulates the amount of wood used in accordance with forest sustainability established on a sustainable basis. In Romania, the volume of harvested wood is less than 50% of the annual growth of the forest. Also, the Forest Code sets out strict rules on changing the land use category of forest land in land with other destinations.</p> <p>Rules are established for compliance with management plans for forests included in the national protected area network, respectively for respecting biodiversity.</p> <p>Objectives are also set for increasing the forest area by afforestation of degraded land.</p>
<b>Sustainability objective mainly addressed:</b>	Increasing the wood stock volume, preserving biodiversity, sustainable forest management
<b>Impact on environmental sustainability aspects:</b>	Sustainable conditions for environmental services derived from forests
<b>Impact on economic sustainability aspects:</b>	Long-term forest management
<b>Impact on societal sustainability aspects:</b>	society benefits related to forest protection functions
<b>Authority in charge of execution and / or certification:</b>	Ministry of Waters and Forests
<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	Forest owners/administrators
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	Forest cultivation, harvesting, transport
<b>Level of direct addressing of transport modes:</b>	Medium (transport in forests)
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Domestic wood supply chain
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	Sustainable market uptake
<b>Limitations and shortcomings:</b>	Limited resources

<b>Any other comments:</b>	None
<b>Data source (Link, legal text, date, etc.)</b>	<a href="https://lege5.ro/Gratuit/geytambvha/codul-silvic-din-2008">https://lege5.ro/Gratuit/geytambvha/codul-silvic-din-2008</a>

## National sustainability schemes on bioenergy products (solid, liquid)

**Table 66: Law establishing a system for promoting renewable energy production**

<b>Title of the scheme in English:</b>	Law no. 220/2008 establishing the system for the promotion of renewable energy production
<b>Title of the scheme in original language:</b>	Legii nr. 220/2008 pentru stabilirea sistemului de promovare a producerii energiei din surse regenerabile de
<b>Current status (in force, planned, abandoned):</b>	In force
<b>Date of entering into force:</b>	2008, changed/ammended in 2017
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	Renewable Energy Directive
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Obligatory
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	The law establishes support schemes for the production of different types of renewable energy.  Eligibility conditions are established to provide support for different types of resource based on sustainability.
<b>Sustainability objective mainly addressed:</b>	Production sustainability of renewable resources energy
<b>Impact on environmental sustainability aspects:</b>	Environmental effects due to avoidance of fossil fuel burning
<b>Impact on economic sustainability aspects:</b>	Energy security
<b>Impact on societal sustainability aspects:</b>	Positive
<b>Authority in charge of execution and / or certification:</b>	Ministry of Energy
<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	Producers and end users
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	Biomass processing and deployment
<b>Level of direct addressing of transport modes:</b>	None
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	National coverage
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	Stimulating
<b>Limitations and shortcomings:</b>	n/a
<b>Any other comments:</b>	n/a
<b>Data source (Link, legal text, date, etc.)</b>	<a href="https://lege5.ro/en/Gratuit/ge2tkmjrgmzq/ordonanta-de-urgenta-nr-24-2017-privind-modificarea-si-completarea-">https://lege5.ro/en/Gratuit/ge2tkmjrgmzq/ordonanta-de-urgenta-nr-24-2017-privind-modificarea-si-completarea-</a>



	legii-nr-220-2008-pentru-stabilirea-sistemului-de-promovare-a-produserii-energiei-din-surse-regenerabile-de-energie-si-pentru-modific
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**Table 67: Environmental Protection Law introduced by OUG 195/2005**

<b>Title of the scheme in English:</b>	Environmental Protection Law introduced by OUG 195/2005
<b>Title of the scheme in original language:</b>	Legii nr. 220/2008 pentru stabilirea sistemului de promovare a producerii energiei din surse regenerabile de
<b>Current status (in force, planned, abandoned):</b>	In force
<b>Date of entering into force:</b>	2005
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	n/a
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Obligatory
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	The law establishes standards and measures for environmental protection, measures for the authorization of economic activities and control institutions. Among areas covered by law: water, air, soil protection. The national system of protected areas is regulated. Institutions are established to have regulatory, authorization and control responsibilities on environmental protection.
<b>Sustainability objective mainly addressed:</b>	Production sustainability of renewable resources energy
<b>Impact on environmental sustainability aspects:</b>	Protection of environmental system services
<b>Impact on economic sustainability aspects:</b>	No direct impact
<b>Impact on societal sustainability aspects:</b>	Protection of environmental system services
<b>Authority in charge of execution and / or certification:</b>	Ministry of Environment and climate change
<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	All target groups
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	Entire supply chain
<b>Level of direct addressing of transport modes:</b>	None
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	National coverage
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	Inhibiting
<b>Limitations and shortcomings:</b>	n/a
<b>Any other comments:</b>	n/a

<b>Data source (Link, legal text, date, etc.)</b>	<a href="https://lege5.ro/Gratuit/hazdmnq/legea-protectiei-mediului-nr-137-1995">https://lege5.ro/Gratuit/hazdmnq/legea-protectiei-mediului-nr-137-1995</a>
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**Table 68: Energy Strategy of Romania 2016-2030, with the prospect of 2050**

<b>Title of the scheme in English:</b>	Energy Strategy of Romania 2016-2030, with the prospect of 2050
<b>Title of the scheme in original language:</b>	Strategia Energetică a României 2016-2030, cu perspectiva anului 2050
<b>Current status (in force, planned, abandoned):</b>	In consultations
<b>Date of entering into force:</b>	Not entered into force yet
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	Energy directives
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Not entered into force yet
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	Romania's Energy Strategy 2016-2030 establishes objectives and a measure of action to ensure Romania's energy security. The primary energy resources and the long-term availability of these resources are evaluated. Sustainability criteria are set for renewable energy production, carbon emissions reduction and pollution in general. The impact of energy production, energy consumption including transport, long-term sustainability and energy balance developments are assessed.
<b>Sustainability objective mainly addressed:</b>	Sustainability of energy production
<b>Impact on environmental sustainability aspects:</b>	New sustainability standards for production of renewable energy resources (biobased); increased utilization of renewable energy sources
<b>Impact on economic sustainability aspects:</b>	Energy security; job creation
<b>Impact on societal sustainability aspects:</b>	Job creation
<b>Authority in charge of execution and / or certification:</b>	Ministry of energy
<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	Energy producers
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	Entire supply chain
<b>Level of direct addressing of transport modes:</b>	None
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	National, domestic biomass
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	Stimulating
<b>Limitations and shortcomings:</b>	n/a
<b>Any other comments:</b>	n/a

<b>Data source (Link, legal text, date, etc.)</b>	<a href="http://www.solarthermalworld.org/sites/gstec/files/news/file/2016-12-30/energy_strategy_2016-2030_full_version_in_romanian.pdf">http://www.solarthermalworld.org/sites/gstec/files/news/file/2016-12-30/energy_strategy_2016-2030_full_version_in_romanian.pdf</a>
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## Other

**Table 69: National Rural Development Program 2014-2020**

<b>Title of the scheme in English:</b>	National Rural Development Program 2014-2020.
<b>Title of the scheme in original language:</b>	Pogramul national de dezvoltare rurala 2014-2020
<b>Current status (in force, planned, abandoned):</b>	In force
<b>Date of entering into force:</b>	2015
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	Common agricultural policy
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Obligatory
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	Regarding sustainability, the environmental eco-conditionality imposed on agricultural producers in the use of land, the use of fertilizers and pesticides, the collection of waste are important. There are conditions for preserving biodiversity, limiting use changes, using 5% of biodiversity conservation areas. The use of compensatory schemes / conditionality allows a good incentive for farmers to comply with agricultural standards.
<b>Sustainability objective mainly addressed:</b>	Sustainable agriculture
<b>Impact on environmental sustainability aspects:</b>	Protection of agricultural land from environmental hazards imposed by intensive industrial farming
<b>Impact on economic sustainability aspects:</b>	A long-term effective and functioning agriculture
<b>Impact on societal sustainability aspects:</b>	n/a
<b>Authority in charge of execution and / or certification:</b>	Ministry of Agriculture
<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	Farmers
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	Biomass cultivation
<b>Level of direct addressing of transport modes:</b>	None
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	National
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	Stimulating
<b>Limitations and shortcomings:</b>	n/a



<b>Any other comments:</b>	n/a
<b>Data source (Link, legal text, date, etc.)</b>	<a href="http://www.pndr.ro/pndr-2014-2020.html">http://www.pndr.ro/pndr-2014-2020.html</a>

### **Assessment of existing sustainability framework conditions along biomass and bioenergy supply chains**

The sustainability of the production, harvesting, transport of biomass and bioenergy production is at the forefront of policies in the forestry, agricultural and renewable energy support schemes.

Forestry legislation in Romania is extremely rigid on the possibility of harvesting wood and virtually neglects the mobilization from primary sources - forest care works, exploitation residues - forest biomass. It is an inhibiting legislation in terms of market uptake. Concerning the use of agricultural land, the main means of intervention is the National Rural Development Program, as a tool that transposes common agricultural policies from EU to national level. Under the environmental conditionality in accessing subsidies for agricultural crops, the compensation schemes are effective in implementing the sustainability conditions. Among these conditions are: preservation of a minimum of 5% of the farm area for biodiversity, regulation of types and quantities of fertilizers and pesticides, intensity and loading of livestock, regulation of waste collection. Environmental law functions as an umbrella, making it indirectly relevant for sustainability aspects of biomass feedstock and bioenergy production.

Regarding the production of bioenergy, the main intervention tool is the Law to Stimulate the Production of Renewable Energy, which also establishes conditions for eligibility of resources for accessing the support schemes. It is a poorly effective and stimulating law in mobilizing biomass resources, with over-compensated investments in wind and solar energy. In the last year, the intensity of support has considerably diminished. The mobilization of forest biomass is discouraged by excluding firewood from using energy from forest biomass, its use being directly prioritized by the population that heats with firewood in the residential sector. As long as the renewable energy strategy also regulating sustainability standards for biomass and bioenergy is not in place, sustainability framework conditions in Romania have to be assessed as overly poor.

**Table 70: Assessment of biomass and bioenergy sustainability framework in Romania**

<b>Biomass and bioenergy sustainability framework in Romania: indicators for assessment</b>	<b>High / strict</b>	<b>Medium</b>	<b>Low</b>
Comprehensiveness of regulation regarding entire supply chain and possible bioenergy products		X	
Comprehensiveness of regulation regarding target groups		X	
Comprehensiveness of regulation regarding geographical scope (domestic & imported biomass and bioenergy products)			X
Level of enforcement of existing EU directives		X	
Overall regulatory deepness		X	
Effectiveness in terms of binding character	X		
Effectiveness regarding environmental sustainability		X	
Effectiveness regarding societal sustainability		X	
Effectiveness regarding economic sustainability			X

Level of stimulating impact on market uptake/demand		X	
Level of inhibiting impact on market uptake / demand		X	

### **Recommendations for harmonization on national, Danube region and EU wide level**

Considering the potential for biomass use in energy production, a special biomass law is needed to encourage both the mobilization of agricultural and forest biomass for bioenergy production. Such national legislation would have an impact on a more sustainable energy mix in Romania and could also increase the biomass and bioenergy market performance in the Danube region.

Overall, biomass feedstock sustainability must be ensured also by increased sustainability regulation schemes on solid biomass on an EU level.

### **5.7 Slovakia**

#### **List of existing sustainability framework conditions (hyperlinks):**

- [Slovak Forest Law](#)
- [Minimum requirement for energy efficiency of buildings heated by bioenergy](#)
- [Guaranteed minimum nominal efficiency of a wood-based bioenergy facility](#)
- [Demonstration of origin of feedstock for fuels production and energy generation](#)
- [Ensuring the sustainability of the wood energy potential in the regions](#)
- [ISCC International Sustainability and Carbon Certification](#) DE

### **National sustainability schemes on biomass feedstock (solid, liquid)**

**Table 71: Slovak Forest Law**

<b>Title of the scheme in English:</b>	Slovak Forest Law
<b>Title of the scheme in original language:</b>	Slovenské lesné právo
<b>Current status (in force, planned, abandoned):</b>	In force
<b>Date of entering into force:</b>	1980, last ammended 1998
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	None
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Legally binding scheme
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	The Slovak Forest Law dates back into the 1800s. It focusses on protecting and conserving nation forest resources and areas in Slovakia.
<b>Sustainability objective mainly addressed:</b>	Sustainable maintenance and management of all ecosystem services provided by forests and forest lands as well as protection from illegal and unsustainable practices
<b>Impact on environmental sustainability aspects:</b>	Improved forest health including all kinds of forest ecosystem services
<b>Impact on economic sustainability aspects:</b>	Long-term economic benefits from national wood resources
<b>Impact on societal sustainability aspects:</b>	Long-term preservation of societal functions of forests and forest lands

<b>Authority in charge of execution and / or certification:</b>	Ministry of Agriculture and Rural Development of the Slovak Republic
<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	Forestry owners and managers
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	Woody biomass cultivation, harvest, transport
<b>Level of direct addressing of transport modes:</b>	Without direct addressing
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Domestic woody biomass
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	Without direct impact on biomass market
<b>Limitations and shortcomings:</b>	n/a
<b>Any other comments:</b>	n/a
<b>Data source (Link, legal text, date, etc.)</b>	<a href="https://www.4biomass.eu/document/file/Slovakia_final.pdf">https://www.4biomass.eu/document/file/Slovakia_final.pdf</a> <a href="http://www.mpsr.sk/en/index.php?navID=30">http://www.mpsr.sk/en/index.php?navID=30</a>

**Table 72: Minimum requirement for energy efficiency of buildings heated by bioenergy**

<b>Title of the scheme in English:</b>	Minimum requirement for energy efficiency of buildings for the need for heating energy from a bioenergy facility
<b>Title of the scheme in original language:</b>	Minimálna požiadavka na energetickú hospodárnosť budov pre potrebu energie na vykurovanie z bioenergetického zariadenia
<b>Current status (in force, planned, abandoned):</b>	In force
<b>Date of entering into force:</b>	January 2016
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	2010 Energy Performance of Buildings Directive
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Legally binding scheme
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	Total energy consumption in buildings accounts for a significant share of final energy consumption. The EU and its Member States, including Slovakia, are therefore pursuing a policy of gradually tightening minimum requirements for the energy performance of buildings.  Decree No. 364/2012 Z.z. Ministry of Construction and Regional Development of the Slovak Republic, which implements Act no. 555/2005 Z.z. on the Energy Efficiency of Buildings and on Amendments to Certain Acts, as amended. 300/2012 Z.z. ..
<b>Sustainability objective mainly addressed:</b>	Sustainable heating of buildings
<b>Impact on environmental sustainability aspects:</b>	Reduction of energy consumption
<b>Impact on economic sustainability aspects:</b>	Sustainable using of biomass feedstocks (woody biomass)

<b>Impact on societal sustainability aspects:</b>	n/a
<b>Authority in charge of execution and / or certification:</b>	Ministry of Agriculture and Rural Development of the Slovak Republic
<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	End users
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	Deployment of bioenergy
<b>Level of direct addressing of transport modes:</b>	Without direct addressing
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Domestic biomass
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	Without direct impact on biomass market
<b>Limitations and shortcomings:</b>	Only for low-capacity energy producers
<b>Any other comments:</b>	n/a
<b>Data source (Link, legal text, date, etc.)</b>	Sustainable Use of Biomass Criteria in Slovak Regions for SR Programs for 2014-2020

**Table 73: Guaranteed minimum nominal efficiency of a wood-based bioenergy facility**

<b>Title of the scheme in English:</b>	Guaranteed minimum nominal efficiency of a wood-based bioenergy facility
<b>Title of the scheme in original language:</b>	Garantovaná minimálna nominálna účinnosť bioenergetického zariadenia na báze dreva
<b>Current status (in force, planned, abandoned):</b>	In force
<b>Date of entering into force:</b>	January 2016
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	Directive 2009/28/EC
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Legally binding
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	<p>Based on Directive 2009/28/EC of the European Parliament and of the Council on the promotion of the use of energy from renewable energy sources recommending Member States to promote only highly efficient conversion technologies (under Article 13 (6) of the Directive in the case of biomass, promote conversion technologies that achieve conversion efficiency of at least 85% for home and commercial use and at least 70% for industrial use ").</p> <p>Criterion exceeds the normative minimum values of the efficiency of heat sources used in the SR (the minimum efficiency of heat generators is determined by Decree of the Office for Regulation of Network Industries No. 328/2005 Coll.) These values are based on the values of the efficiency of transformation and heat distribution as defined by Decree of the Ministry of the Environment, No 364/2012, which implements Act No. 555/2005 Coll., on Energy Efficiency of Buildings. It should be noted, however, that</p>

	the heating energy demand, as defined by Decree No. 364/2012 Coll., does not include losses in heat generation but only losses in distribution and heat transfer).  Different values of the minimum nominal efficiency of bioenergetic devices are also considered according to the size of their installed capacity.
<b>Sustainability objective mainly addressed:</b>	Sustainable and efficient utilization of biomass for heating
<b>Impact on environmental sustainability aspects:</b>	Improvement of the energy conversion/efficiency increases, efficiency of energy production from biomass
<b>Impact on economic sustainability aspects:</b>	Improvement of the energy conversion, decrease of operation costs
<b>Impact on societal sustainability aspects:</b>	No impact
<b>Authority in charge of execution and / or certification:</b>	Ministry of Agriculture and Rural Development of the Slovak Republic
<b>Target group(s) along the value/supply chain (who is in charge of proving biomass/bioenergy sustainability?):</b>	Biomass energy producers, end users
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	Processing
<b>Level of direct addressing of transport modes:</b>	None
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Domestic biomass
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	Stimulating
<b>Limitations and shortcomings:</b>	Only for low-capacity energy producers
<b>Any other comments:</b>	n/a
<b>Data source (Link, legal text, date, etc.)</b>	Sustainable Use of Biomass Criteria in Slovak Regions for SR Programs for 2014-2020

**Table 74: Demonstration of origin of feedstock for fuels production and energy generation**

<b>Title of the scheme in English:</b>	Demonstration of the origin of feedstock for the production of fuels and energy generation
<b>Title of the scheme in original language:</b>	Preukazovanie pôvodu vstupnej suroviny na výrobu palív a získavanie energie
<b>Current status (in force, planned, abandoned):</b>	In force
<b>Date of entering into force:</b>	January 2016
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	n/a
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Legally binding scheme
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	Regarding the harvested timber, according to the valid SR regulations, only wood whose technical parameters are no longer allowed for industrial or other processing with higher added value (quality assortment class VI produced

	by the production and handling of wood) can be used for the production of fuels and energy generation as waste). Wood burning is considered to be the least socially desirable use of harvested wood.  Decree of the Network Regulatory Office of 18.11.2009 laying down details on the promotion of renewable energy sources, high efficiency cogeneration and biomethane
<b>Sustainability objective mainly addressed:</b>	Woody biomass
<b>Impact on environmental sustainability aspects:</b>	Regulation of timber harvest ensures environmental sustainability
<b>Impact on economic sustainability aspects:</b>	Regulation of timber harvest decreases the local/domestic offer of wooden biomass
<b>Impact on societal sustainability aspects:</b>	n/a
<b>Authority in charge of execution and / or certification:</b>	Ministry of Agriculture and Rural Development of the Slovak Republic
<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	Biomass producers
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	Biomass cultivation, harvest
<b>Level of direct addressing of transport modes:</b>	None
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Domestic biomass
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	Decreases offer of woody biomass
<b>Limitations and shortcomings:</b>	n/a
<b>Any other comments:</b>	n/a
<b>Data source (Link, legal text, date, etc.)</b>	Sustainable Use of Biomass Criteria in Slovak Regions for SR Programs for 2014-2020

**Table 75: Ensuring the sustainability of the wood energy potential in the regions**

<b>Title of the scheme in English:</b>	Ensuring the sustainability of the wood energy potential in the regions
<b>Title of the scheme in original language:</b>	Zabezpečenie udržateľnosti potenciálu dreva na energetické využitie v regiónoch
<b>Current status (in force, planned, abandoned):</b>	In force
<b>Date of entering into force:</b>	January 2016
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	Directive 2009/28 / EC
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Legally binding scheme
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	The maximum transport distance within the entire energy harvesting cycle of wood shall not exceed 50 km. For each submitted project, there must be sufficient potential in the

	<p>defined area of the wood material to obtain the required amount of energy or the production of the fuel.</p> <p>Justification - Under Directive 2009/28 / EC of the European Parliament and of the Council on the promotion of energy use from RES, "the transition to decentralized energy production has many advantages, including the use of local energy sources, increasing local energy security, shorter transport distances and reducing transmission losses energy. "Criterion 4 is fully in line with the section cited in this directive.</p>
<b>Sustainability objective mainly addressed:</b>	Woody biomass
<b>Impact on environmental sustainability aspects:</b>	Energy conversion on the place of biomass production
<b>Impact on economic sustainability aspects:</b>	Energy production without raising transport costs
<b>Impact on societal sustainability aspects:</b>	None
<b>Authority in charge of execution and / or certification:</b>	Ministry of Agriculture and Rural Development of the Slovak Republic
<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	Biomass producers and trader
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	Deployment for bioenergy production
<b>Level of direct addressing of transport modes:</b>	Road transport
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	Domestic biomass
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	Stimulating
<b>Limitations and shortcomings:</b>	n/a
<b>Any other comments:</b>	n/a
<b>Data source (Link, legal text, date, etc.)</b>	Sustainable Use of Biomass Criteria in Slovak Regions for SR Programs for 2014-2020

## Public and private certification schemes, labels, standardization norms etc. for sustainability of biomass and bioenergy

Table 76: ISCC International Sustainability and Carbon Certification DE

<b>Title of the scheme in English:</b>	ISCC International Sustainability and Carbon Certification DE (German scheme applicable to all types of biofuels) - Validity of EC decision 11.8.2016 - 10.8.2021
<b>Title of the scheme in original language:</b>	n/a
<b>Current status (in force, planned, abandoned):</b>	Under the provisions of Act no. 309/2009 Coll. as amended, §14c, para. 7, the fulfillment of the sustainability criteria for biofuels and bioliquids can also be demonstrated through



	voluntary schemes recognized by the European Commission
<b>Date of entering into force:</b>	n/a
<b>Relation to existing EU regulations, directives, etc. (and which):</b>	The measures provided for this Decision are in accordance with the opinion of the Committee on the Sustainability of Biofuels and Bioliquids established in accordance with Article 25 (2) of Directive 2009/28 / EC, the 'Austrian Agricultural Certification Scheme' complies with the conditions laid down in Directives 98/70 / EC and 2009/28 / EC.
<b>Legal status (obligatory/legally binding or voluntary scheme):</b>	Voluntary scheme
<b>Brief description of content and objective, e.g. risks addressed (5-15 sentences):</b>	Includes: -Quality of petrol and diesel fuels -Promoting the use of energy from renewable energy sources -Sustainability criteria for biofuels and bioliquids
<b>Sustainability objective mainly addressed:</b>	Certification, respectively demonstrating compliance with sustainability criteria; covers virtually all parts of the biofuel supply chain. Ensuring compliance with these criteria must be confirmed by the certification body with appropriate accreditation and authorization. Biomass growers are also involved in the certification process in that they themselves issue a so-called independent biomass grower's statement about meeting the sustainability criteria. An important interconnection in terms of greenhouse gas emissions is also transport.
<b>Impact on environmental sustainability aspects:</b>	Increased share of biomass and bioenergy from sustainable source in the energy mix
<b>Impact on economic sustainability aspects:</b>	Increased energy security
<b>Impact on societal sustainability aspects:</b>	n/a
<b>Authority in charge of execution and / or certification:</b>	ISCC certification bodies responsible for Slovakia (there is an ISCC EU and an ISCC DE for Germany)
<b>Target group(s) along the value/supply chain (who is in charge of proofing biomass/bioenergy sustainability?):</b>	Entire supply chain
<b>Scope of supply chain elements covered (biomass cultivation, harvest, transport, processing and/or deployment of bioenergy):</b>	Entire supply chain – however, voluntary scheme
<b>Level of direct addressing of transport modes:</b>	n/a
<b>Scope of geographical coverage (e.g. origin of the biomass, domestic and/or imported):</b>	All types, also imported
<b>Influence/impact on market uptake (stimulating or inhibiting):</b>	Stimulating (image gains)
<b>Limitations and shortcomings:</b>	n/a
<b>Any other comments:</b>	Companies have to organize certification and audit procedures themselves

<b>Data source (Link, legal text, date, etc.)</b>	L 122/60 EN Official Journal of the European Union 12.5.2016 OJ. in. OJ L 350, 28.12.1998, p. 58 .; OJ. in. OJ L 140, 5.6.2009, p. 1
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### **Assessment of existing sustainability framework conditions along biomass and bioenergy supply chains**

In Slovakia, the protection of forests and the biomass derived thereof irrespective of its final purpose is highly important and dates back into the 18<sup>th</sup> century (4Biomass, 2016). Therefore, it can be said that sustainability of bioenergy derived from woody biomass is currently most comprehensively covered by national Slovakian regulation.

A number of these legally binding schemes have been introduced that transpose EU directives into Slovakian law, the main reference here is the RED Directive (2009/28 / EC). As the existing national framework on sustainability is only covering domestically produced and only private, voluntary schemes as for example the ISCC certificate also enforces sustainability standards on imported biomass, the comprehensiveness of the Slovakian regulation in terms of geograpical scope has to be defined as low and needs further regulation. Overall, the Slovakian biomass and bioenergy sustainability framework can be assessed as medium-performing. Slovakia clearly is not at the forefront of European sustainability regulations in this regard. On the other hand, it can be said that the existing conditions only have low impact on the market demand, making them more or less neutral in terms of market interference.

**Table 77: Assessment of biomass and bioenergy sustainability framework in Slovakia**

<b>Biomass and bioenergy sustainability framework in Slovakia: indicators for assessment</b>	<b>High / strict</b>	<b>Medium</b>	<b>Low</b>
Comprehensiveness of regulation regarding entire supply chain and possible bioenergy products		X	
Comprehensiveness of regulation regarding target groups		X	
Comprehensiveness of regulation regarding geographical scope (domestic & imported biomass and bioenergy products)			X
Level of enforcement of existing EU directives		X	
Overall regulatory deepness		X	
Effectiveness in terms of binding character		X	
Effectiveness regarding environmental sustainability		X	
Effectiveness regarding societal sustainability		X	
Effectiveness regarding economic sustainability		X	
Level of stimulating impact on market uptake/demand			X
Level of inhibiting impact on market uptake / demand			X

### **Recommendations for harmonization on national, Danube region and EU wide level**

Slovakia, along with other countries, is committed to meet the EU's 20-20-20 objectives with the purpose of reducing the pace of climate change. The most important measures in this respect are

reducing energy consumption and increasing the share of renewable energy sources (RES) to the gross final energy consumption. The share of RES in gross final consumption of energy in Slovakia in 2013 accounted for 10.9% and by the year 2020 will be increased to 14%. The EU level should reach at least 20% by 2020 and the share of 27% until 2030. The largest share of energy from RES in Slovakia came from biomass, particularly from solid biomass (especially of wood) (European Commission, 2009).

Solid biomass used for bioenergy purposes is not covered by existing sustainability criteria either on EU (European Commission, 2009) nor on Slovakian national level. Past experience with the use of solid biomass energy is showing the need for a responsible and comprehensive procedure in designing sustainability regulations also for solid biomass and energy produced thereof.

In Slovakia, a working group has been established to organize this process (Friends of the Earth, 2015) but no results are imminent as of today. Only biomass which use does not endanger the long-term regeneration potential and ecological stability of the site from which it originates, as well as the provision of other important ecosystem services such as water retention, carbon storage, soil protection and biodiversity, should be considered as a renewable resource.

Forest statistics confirm that timber harvesting in Slovakian forest land has long exceeded the planned (bearable) pace. Over the past 25 years, real wood logging in the Slovak Republic has grown from 5.3 million m<sup>3</sup> (1990) to more than 9.4 mil. m<sup>3</sup> (2014), i.e. by 78% (NFC, 2015).

The problem is the increase in the volume of accidental extraction, which may also have an impact on economic pressure and favorable incentives to use wood for energy purposes. The so-called calamity situation allows not only to circumvent the normal legal procedures regulating the logging that has been established in order to ensure its bearing capacity and maintain the consistency between the productive and non-productive functions of the forests, but also to increase the intensity of the mining interventions in the protective forests. The emergence of a large wood-based fuel market in Slovakia, which supported a massive subsidy system, exerts pressure to weaken the legal protection of forests rapidly expanding poorly regulated timber harvesting on non-forested land and illegal logging. These factors along with the growth of calamity mining reliably signal future problems of wood biomass production stability and non-production ecosystem services. In addition to the degradability of the wood biomass potential, the predisposed timber extraction for energy use is also reflected in an increased risk of flooding, soil erosion, etc.

Therefore, on national level, only the use of biomass which does not endanger the long-term regeneration potential and ecological stability of the site from which it originates, as well as the provision of other important ecosystem services such as water retention, carbon storage, soil protection and biodiversity in forest areas, should be considered a renewable resource.

Moreover, illegal logging needs to be prosecuted in a stricter manner and wood assortments going into combustion need to be focussing on wood waste. In respect to agricultural resources, a national program to support the transformation of biomass into energy carriers (solid, liquid and gaseous) in a sustainable manner should be established.

On EU level, strategies and policies on biomass sustainability have to be further developed and streamlined in the light of increased biomass demand for bioenergy production and the EU's

efforts to develop a biobased economy. Moreover, indirect land use change as well as external effects of EU level bioenergy consumption on non-EU countries should be included in EU-level biomass sustainability regulation in a more stringent manner than presently done.

The key issue is that the criteria in place on EU level for liquid biofuels do not apply to solid biofuels, so they do not even apply to the most important kind of biomass used for energy purposes in the EU and Slovakia. One reason was the resistance of influential companies, whose profits depend on the extraction, trading, processing or energy use of wood, since the application of the sustainability criteria would by definition affect their commercial interests (Arnold, K. et al., 2009).

At EU level, a policy change is currently being discussed to promote renewable energy sources. The topic of discussion should also be a policy proposal to promote bioenergy. In order to obtain sustainable energy from biomass in the EU after 2020, it is imperative that the targets of the EU's upcoming climate-energy package by 2030 be made by the following principles (European Commission, 2017b):

1. Set a limit for bioenergy
2. Ensure the implementation of the right hierarchy of energy priorities
3. Introduce the correct procedure for calculating the carbon balance
4. Modify and extend binding sustainability criteria
5. Adhere to the principles of the circulating economy and the cascade use of biomass
6. Re-direct support for the production of biofuels of higher generations with appropriately adjusted carbon balance calculations

In addition, biomass is an important asset of rural regions in the Danube region that can be used for its development. In the Danube region, especially the economic and societal sustainability needs to be addressed in a more stringent way when it comes to biomass and bioenergy. Some parts of it are in rural governments' hands. They should protect, enhance and manage this potential. They should create strong barriers to the export of their energy sources (e.g. wood and waste) and the sale of property that is useful for strengthening their own energy autonomy. They should build their own energy operations and create effective mechanisms against the leakage of revenues from the production and sale of fuels and energy from their territory, creating national added value.

Building sustainable autonomous energy in rural areas is the most effective protection against unwanted concentration of economic power in the sector. The sooner the regions are reluctant to depend on foreign energy suppliers, the more stable they will be in the times of economic turmoil and waning stocks of conventional energy sources.

The real situation is the opposite: growing pressure on over-mined logging (both in forests and non-wooded land) and rising export from rural areas can be witnessed. One source of rural decapitalization is foreign export of untreated energy biomass, also exporting the value added resulting from processing and conversion processes. The volume of net exports of wooden fuels from Slovakia increased more than 5 times. More than 85% of the domestic annual production of wood pellets (80,000 t) is exported, with the production capacity of the installed lines still

significantly higher than the actual production. A similar situation is in the production of wood briquettes (Oravec M, Slamka M, 2014). When considering energy policy in the regions around the Danube and in the efficient reallocation of biomass stocks, these aspects need to be considered. In this respect, also a strategic consideration of the transport of biomass / energy carriers from the point of its harvest to the place of consumption is in order.

## **6. Analysis and transnational recommendations**

### **6.1 Analysis of national biomass sustainability framework conditions**

Overall, the ENERGY BARGE consortium has gathered 68 schemes pertaining to one, two, or ideally all three defined pillars of biomass and bioenergy product sustainability. Some of these schemes fulfil this function in a more direct, explicit and comprehensive way than others. More than a third of all schemes listed is only indirectly addressing aspects of biomass production for energy purposes and bioenergy production itself as they are rather general schemes on environmental protection than concrete biomass sustainability schemes.

A precedent case for such a scheme present in all partner countries and also in those Danube Transnational Programme (DTP) countries not part of the ENERGY BARGE consortium (4Biomass, 2016; S2Biom, 2016), is a legislation on sustainable forest management. This fact is clear evidence for the historic roots of the sustainability concept in forest management shaped by Carl von Carlowitz in the 1600s.

However, with the overall EU and also often national aim of increasing utilization of biomass for non-food and feed purposes, also the need to safeguard sustainability of biobased resources increased. This is also visible in the schemes directly addressing biomass and bioenergy product sustainability as all of them are not older than 15 years and are somehow derived from EU-level legislation.

Although no claim for absolute comprehensiveness and coverage can be made and despite the fact that it was up to the partners' discretion to select the schemes most relevant to the topic area of biomass and bioenergy sustainability, the 68 schemes recorded in total indicate that the national framework landscape on biomass and bioenergy sustainability in the Danube region is quite extensive. Some countries, such as Germany, give a quite extensive picture of public and private schemes with direct or indirect relevance for biomass sustainability. Croatia, Romania and Bulgaria list state schemes that are currently under development, all of which will potentially significantly contribute to improved sustainability standards on biomass production in these countries (e.g. short rotation coppice ordinance in Croatia).

National schemes addressing the bioenergy products themselves at a certain point of the supply chain are the most frequently named schemes, followed by national schemes on sustainable sourcing of biomass feedstocks, are the most frequent schemes. With 12 schemes listed in total, the public and private certification and standardization schemes follow, with each country except for Romania at least counting one of these sometimes privately governed schemes that only

address private actors and function on a voluntary basis. Seven schemes governing biomass or bioenergy sustainability could not be categorized according to the given categories, but still qualified for listing.

Having stated this, the listed schemes also make apparent that the individual schemes themselves as well as the national frameworks they form and the conditions they set for national and transnational sustainable energetic utilization of biomass differ not only in quantity but also and most importantly in quality.

This heterogeneity especially pertains to diverging regulative content with respect to different types of feedstock and/or bioenergy products, different sectors, different elements of the supply and value chain, different actors and differing geographical scope and coverage.

The most visible divergence appears between the different focus areas or pillars of sustainability the schemes address. Almost all listed schemes are categorized as addressing environmental sustainability. Fewer schemes address aspects of economic sustainability, and less than half are being assessed as contributing to objectives of societal sustainability. Which means that only a maximum half of all schemes are actually covering all three pillars of sustainability, as theoretically foreseen by the concept.

The emphasis on the forest and woody biomass sector that has already been identified above is also evident in this overview, considering that half the schemes address woody biomass feedstocks, or, to a lesser extent, solid bioenergy products such as pellets or similar. Only 25 schemes are covering agricultural biomass feedstocks. Liquid biofuels are also only covered by 27 schemes, but these are, as a consequence of the EU situation, quite direct and explicit sustainability schemes.

With schemes addressing biomass cultivation and harvesting, schemes addressing processes from feedstock to bioenergy products, and those addressing the actual deployment of the bioenergy (incl. technology and combustion appliances) being listed in a comparable number, a quite even coverage of the supply chain as well as of the actors / target group landscape can be assumed.

Clearly, legally binding schemes prevail with 52 over only 15 schemes with voluntary character. 43 of the listed schemes are identified as directly or indirectly resulting from EU legislation. As also becomes apparent in the national recommendations sections, a very small number of only 17 schemes addresses the entirety of biomass and bioenergy products utilized on national level, meaning that also imported feedstock and energy carriers are included. 35 schemes are seen as directly stimulating the uptake of bioenergy solutions on the market, resulting in higher demand, while only two are identified as actively inhibiting it.

As the ENERGY BARGE project eventually also aims at assessing the options of transporting biomass along its value chain on environmentally-friendly transport and logistics route such as the inland waterway, in case logistics solutions are needed and economically viable, partners were also asked to assess in how far individual schemes cover aspects of sustainable transport options.



A focus here was on actual transport of the biomass feedstock or products itself. 12 of the totally 68 schemes were indicated as addressing aspects of sustainable transport options. When having a look at the respective schemes, at least half of them regulate the utilization of biofuels for transport, meaning that they do contribute to a more sustainable freight transport as fuel, but not that their overall biomass sustainability performance is enhanced through the usage of sustainable ways of transport.

Back to back with this rather heterogeneous content-wise/qualitative coverage of different aspects of the biomass and bioenergy sectors comes a diverging level of overall effectiveness and comprehensiveness of the schemes making up the national sustainability framework conditions, as can be seen when cross-comparing the chosen qualitative assessment criteria for overall framework effectiveness.

All seven partner countries quite evenly assess their overall national sustainability frameworks as medium with respect to overall comprehensiveness of the regulations when it comes to covering the entire supply chain. The same is true for the comprehensiveness regarding target groups. This overall seems to indicate that national framework conditions on sustainability are in thusfar favourable as they evenly affect different supply chain elements as well as actors along this chain, facilitating burden sharing and reaping of benefits. A different picture arises when looking at the comprehensiveness of geographical coverage. Only Austria, Germany and Hungary assess their overall framework as medium in safeguarding that biomass not only from domestic sources but also imported is living up to sustainability standards that can be ensured nation-wide. The other four see their national frameworks as low-performing in this category. A better picture arises with respect to the assessment of in how far national schemes translate EU directions into national law. Here, Germany, Hungary and Austria assess their overall framework as high-performing, Romania, Bulgaria, Croatia and Slovakia as medium-performing. A similar picture arises for overall regulatory deepness, indicating that overall, the legislation in place pertains to the issues to be subject of regulation in a coherent manner. Interestingly, only Croatia assessed its overall sustainability framework as being a low-performer with respect to its binding character, especially criticizing the fact that enforcement is weak.

In terms of in how far the overall national frameworks are able to address the three pillars of sustainability, it becomes apparent that not all pillars are covered to the same extent. Germany and Austria assess their frameworks as overly highly effective in safeguarding environmental sustainability, all other five at least assess it as medium. A more mixed picture is visible for the other two pillars of sustainability. Especially Bulgaria assessed its framework a low-performing in both categories. In total, only Germany assessed its framework as highly effective in all three pillars.

When looking at the last duo of categories, namely the impact the sustainability framework conditions have on the overall market performance of biomass and bioenergy, all countries except for Bulgaria and Slovakia (low), assess the overall impact as rather market-stimulating (medium). None of the countries indicate that the entirety of their national sustainability measures actively



inhibits biomass market development, depicting a positive sign for future sensible sustainability framework additions.

## 6.2 Transnational recommendations for biomass sustainability frameworks

In order to gain a comprehensive picture of how sustainability standards on biomass and bioenergy are enforced in the Danube region, the ENERGY BARGE partners were asked to also indicate shortcomings and limitations apparent in their national frameworks and to suggest remedy in the shape of recommendations, if possible separated into national, Danube-wide and EU-wide recommendations.

When looking at the assessment texts as well as the formulated recommendations, a general two-level approach to biomass and bioenergy sustainability becomes apparent – with a difference of focus depending on the country under consideration. On a first level, as mentioned before, utilizing biobased materials for energy purposes is considered as environmentally, but also economically and societally sustainable in itself as it substitutes fossil resources and can contribute to climate change mitigation or at least CO<sub>2</sub> reduction. On the second level, utilization of biomass for energy (and other non-food) purposes is only considered sustainable under a certain set of conditions and standards, which mainly pertain to the sustainable production of the feedstock – irrespective of whether it is domestically sourced or imported.

Especially in Germany and Austria where bioenergy markets are well-established or have even already undergone a number of developing and changing cycles, the second level is prevailing. This also results in recommendations asking for a more stringent set of transnational or even international sustainability standards for biomass utilized in the energy market. The Austrian set of recommendations, for example, besides emphasizing the importance of sustainable utilization of forestry resources and a higher prioritization of economic sustainability on national level, opts for a stricter standards regime on international level, calling on international bodies: “Options for establishing sustainability standards for bioenergy under the WTO rules need to be explored in more detail. Bodies like the EU could partner with interested countries like Brazil or South Africa to create bilateral or multilateral agreements on sustainable bioenergy imports that are subject to standards and verification procedures”.

Countries with a less developed bioenergy market, on the other hand, rather formulate national recommendations that aim towards strengthening the overall share of bioenergy in the national energy mix, thus attempting to improve sustainability of the energy system (addressing energy policy goals of environmental friendliness of energy sources and energy efficiency). Also calls for a stricter national enforcement of regulations are stated, for example in the Bulgarian and Croatian regulations.

Croatia, Hungary and Romania ask for regional biomass logistics centres for solid / woody biomass, mainly, on national level, enabling improved biomass management, feedstock flows and processing. Croatia even sees that such nodes could also improve the efficiency and sustainability

of biomass transport with new modes being implemented more easily (placing the collection point next to the waterway or a railway), making it a definite transnational recommendation or solution at the centre of the ENERGY BARGE project. Slovakia emphasizes a national interest with impact on Danube- and EU-level, voicing a higher need for economic and societal sustainability of biomass and bioenergy production in a sense that processing steps and thus value added should stay within national boundaries for as long as possible.

All national recommendation sets have in common that they call for an EU-wide approach on an equal treatment of biomass feedstock and bioenergy product types in the light of existing regulations for biofuels and bioliquids for transport, but missing regulations for solid biomass for heating, cooling and electricity generation.

### 6.3 Transnational ENERGY BARGE sustainability recommendations

Based on the above analysis, this document shall finally provide a set of transnational recommendations safeguarding a level-playing field along the Danube region's biomass and bioenergy value and supply chains and high and equal sustainability standards that are in line with market requirements and allow competition on the market. The recommendations also partly pertain to EU-level.

These recommendations for increased biomass and bioenergy sustainability includes:

- 1) Bioenergy use in the Danube region needs to contribute to climate change mitigation and all three pillars of sustainability, avoiding direct or indirect land use change and depletion of environmental resources and biodiversity, via the introduction of international binding sustainability standards for all kinds of biomass, including imports.
- 2) Barriers of trade or distortions of the EU and national markets shall be avoided via a stringent EU-wide regime on biomass sustainability standards for all kinds of biomass, including imports and solid biomass.
- 3) An EU-wide guideline regarding legally binding sustainability standards for solid biomass and bioenergy from solid biomass shall be established. In this respect, also aspects of biomass / bioenergy product transport sustainability (environmental performance of transport modes used) shall be considered.
- 4) Comprehensive sustainability schemes, irrespective of legislative level and character (national, regional, binding, voluntary), shall be formulated and targeted in such a way that each pillar of sustainability is checked for its relevance and that it facilitates burden and benefit sharing among stakeholders, especially market actors.
- 5) A higher penetration of private certification schemes in Danube countries shall be advertised in order to facilitate market entry of e.g. traders and bioenergy producers from

Eastern European countries to Western European markets where certification is more widespread.

- 6) Economic sustainability ought to be ensured both by public and private actors, e.g. investors, on national and transnational trading level in order to ensure that the first steps of value added at least remain in the country of biomass origin.
- 7) A 'coalition of the willing' within the Danube Transnational Programme area should advertise for a Danube biomass sustainability scheme – possibly on voluntary level -, also including options for sustainable biomass logistics such as a network of regional biomass logistics centres with a possibility to be located in or close to inland ports.
- 8) Future policy-development regarding the framework for utilization of biobased materials in the energy and material sectors (bioeconomy) shall ideally be made in parallel or prior to further market development and shall ensure reliability for market actors in order to avoid legislative U-turns and uncertainty for investors.

These recommendations will be transferred into the ENERGY BARGE project's output "Danube Biomass and Bioenergy Atlas", a tool that will be available online and shall assist all market actors along the biomass and bioenergy value chain on entering the market along the Danube, thus improving energy security and an increased utilization of bioenergy. These recommendations will also be forwarded to the project's network from the policy level and will be especially valuable as the European Commission will propose a new renewable energy package for the period after 2020 with a stronger focus on sustainability criteria also for biomass beyond the biofuels/liquid sector (PricewaterhouseCoopers, 2017), making it possible to have an influence on the policy making process.

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