

ENERGY BARGE

Building a Green Energy and Logistics Belt

Project Code: DTP1-175-3.2

Output Evidence Document

Output 4.1

Modal Shift Platform for Green Bioenergy Logistics

October 2018



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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 Nachhaltige Rohstoffe e.V.	FNR	Germany
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Project partners

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

This report corresponds to “Output 4.1 -Modal Shift Platform for Green Bioenergy Logistics”. It has been prepared by:

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1 General information

This evidence document refers to the ‘Modal Shift Platform for Green Bioenergy’ and provides additional information about the online platform, supplementing the information in the output factsheet. Together with the evidence document for Output 3.1 it provides exhaustive information about the development and functionality of the online platform.

For a content-related overview, see the output factsheet as well as the implementation manual which covers Outputs 4.1 and 3.1.

The modal shift platform is designed as an online platform that visualises both the Danube biomass and bioenergy and the Danube logistics markets, their relevant actors, locations, good practice examples and exemplifying supply and value chains. It thus is a cross-sectoral tool which supports biomass and bioenergy actors with the provision of expertise, contacts and know-how on the transport, handling and storage of biomass along the Danube River and, at the same time, provides actors from both sectors with information on the relevant respective company landscapes along the navigable Danube.

The platform is accessible via www.energy-barge.eu and is optimised for common web browsers (Mozilla Firefox, Internet Explorer, and Google Chrome) as well as for mobile devices.

2 Output evidence

The following section provides evidence of the finalised output “Modal Shift Platform for Green Bioenergy Logistics”. This evidence is presented in the form of exemplifying screenshots¹ taken from the online platform www.energy-barge.eu, covering the three project outputs 3.1 and 4.1.

In general, all sites of the platform are integrated and open within the website. Additional information, e.g. reports, deliverables or external information as well as the websites of third parties open in a new window.

The following elements of the online platform are visualised with exemplifying screenshots:

- Joint landing page with basic information, an overview of the tools and the objectives of the platform (Figure 1).
- Modal shift platform incl. biomass and bioenergy atlas and good practices tools² (Figure 2-7): On the left and right side of the map parameters and filters can be set. In accordance to the filters, the representation on the map changes dynamically. The changes occur based on the underlying data, referring to 1) Danube logistics services, 2) Biomass and

¹ Screenshots were accessed on Oct. 5th, 2018, subject to modifications.

² Output 3.2., the good practices tool, will be made available on the platform during project period 5.



bioenergy atlas or 3) Good practices. Each of the topics with several sub-topics can be chosen for presentation.

- Danube logistics services (ports and shipping companies): The presented ports are organised by country and enable the user to find the closest port available to a certain location (Figure 3). This is highly valuable information to foster the transport on the Danube River. By choosing one country the user receives more information about all ports of the respective country along the Danube River (Figure 4). The map is automatically zoomed in so that detailed information about the location is available. Below the newly centralised map, the user gets detailed information about the chosen port with general information, details regarding biomass facilities and the link to the port's website. Shipping companies can be seen in an individual representation (Figure 5). The logistics service providers are presented in a list with all necessary information. Easy access to the respective information is provided through the map. These features of the online platform shall strengthen networks of co-operation.
- Biomass and bioenergy atlas (companies, feedstock flows; land cover layer, Figure 6): The data of the project can be filtered and visualised individually. By using the right sidebar, various types of biomass companies dynamically (trader, supplier, processor, end user, institutions, clusters & research) are presented. Via scrolling, different countries can be selected, via zooming, more details are available. By clicking on the icons, more detailed information on the respective company is shown. In addition, the biomass feedstock flows of each country for the years 2012-2016 can be shown. Two types of presentation can be chosen: Import-export-feedstock-flow or a presentation of detailed information as pie charts (Figure 7). The map visualizes the direction of biomass imports and exports. By clicking on one of the arrows detailed information about the amount and type of feedstock flow becomes available.
- Additional information (Danube logistics sector (Figure 8), biomass & bioenergy sector (Figure 9): Detailed information about the respective topics is provided and the user can enter the Modal Shift Platform directly. In addition, more in-depth reports of the project can be assessed by clicking on the buttons provided. In the Danube logistics sector segment, users can access the ENERGY BARGE Handbook, a practical guide for transporting biomass on the Danube River (Figure 10).

The ENERGY BARGE platform at a glance

			
<p>Bioenergy markets Explore the national and transnational biomass and bioenergy markets in the Danube region.</p>	<p>Green Danube logistics Learn what Danube logistics can do to facilitate biomass transport and how Danube ports can become biomass and bioenergy hubs. Get practical guidance on the transport, handling and storage of biomass along the Danube.</p>	<p>Find your partner Use the ENERGY BARGE platform to find new partners along bioenergy value and supply chains and discover possibilities for new logistics solutions.</p>	<p>Value chains Get an overview over current biomass import and export flows relevant for the bioenergy sector and explore potentials for improved and sustainable utilization of biomass for bioenergy purposes.</p>

JOIN US

and benefit from the bioenergy and modal shift platform - a place where infos on the Danube region's biomass and bioenergy business and the Danube logistics meet

Fully utilize the synergies between the bioenergy & biomass industry and the Danube logistics sector. [Register your company free of charge!](#)

The three ENERGY BARGE tools are:

<p>BIOMASS & BIOENERGY ATLAS</p>  <p>Get an overview on the company landscape, business contacts, potentials and feedstock flows along the Danube in our atlas.</p>	<p>DANUBE LOGISTICS</p>  <p>Find practical guidance and partners for green bioenergy logistics along the Danube.</p>	<p>GOOD PRACTICES</p> <p>Coming soon!</p>  <p>Learn from working examples utilizing biomass as well as the benefits from inland waterway transport and port locations and benchmark your case.</p>
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Sign up

Become part of our platform supporting key actors and stakeholders from the bioenergy industry in gaining access to suitable Danube logistics services. The website promotes the building of new partnerships, improves cross-sectoral cooperation and provides information to support the development of innovative value and supply chains.

[Register company now for free](#)



Figure 1: Joint landing page. www.energy-barge.eu. The three pillars of the online platform are presented, which offer the entry point to the main page, the modal shift platform (dynamic map).

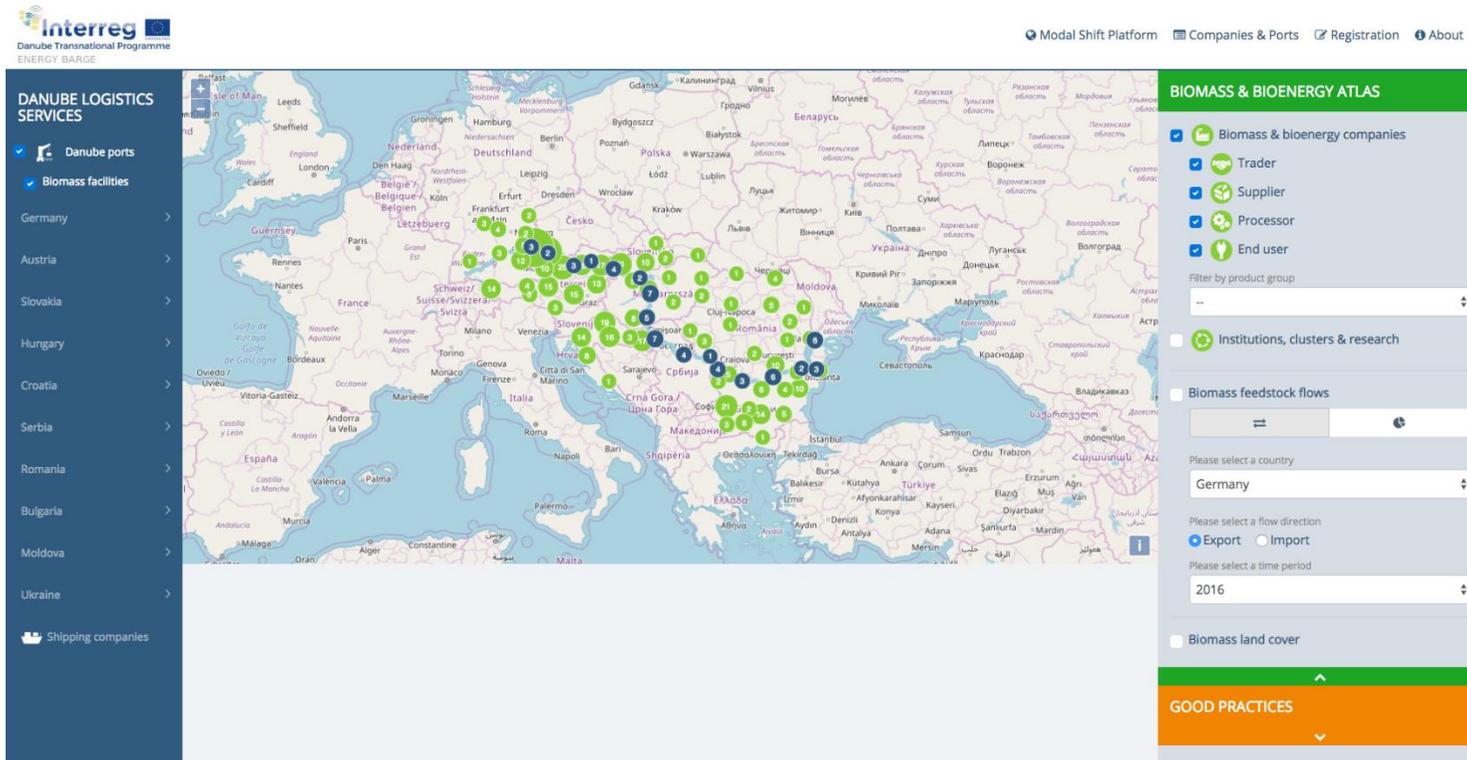


Figure 2: The modal shift platform. The central map is the core element of the online platform. It offers information about ports, companies, feedstock flows and good practices dynamically. In this view ports as well as biomass and bioenergy companies are filtered.

Figure 3: Ports and shipping companies. The ports are organised by countries, which can be chosen individually to find more information. The shipping companies are presented in a list.

The screenshot displays the 'DANUBE LOGISTICS SERVICES' interface. A sidebar on the left lists countries, with 'Austria' selected. The main area shows a map of Vienna and a 'DANUBE PORT PROFILE' for Vienna. The profile includes contact information for the port company and a table of storage and transshipment services.

DANUBE PORT PROFILE

Vienna

Location: Vienna (Austria)

Port company: Wiener Hafen und Lager Ausbau- und Vermögensverwaltung, GmbH & Co KG

Website: www.hafen-wien.com

E-Mail: office@hafenwien.com

Port is suitable for biomass handling

Type of storage	
Open storage area	Covered storage area
✓	✓

Transshipment services for		
Dry bulk	Break bulk	Liquid bulk
✓	✓	✓

Figure 4: Detailed information about ports in the Energy Barge partner countries. By choosing one country the user can get more information about all ports of the respective country.

DANUBE LOGISTICS SERVICES

- ✓ Danube ports
- Germany
- Austria
- Slovakia
- Hungary
- Croatia
- Serbia
- Romania
- Bulgaria
- Moldova
- Ukraine

Shipping companies

SHIPPING COMPANIES AND SHIP BROKERS

Shipping companies are commercial transport companies that professionally organise and implement the transport of goods on inland waterways by using their own vessels. In order to market their services shipping companies often cooperate with ship brokers. Brokers are the contract partner of the company placing the order for transport and rent cargo space from shipping companies. Both shipping companies and ship brokers act as experienced logistics service providers for the bioenergy and biomass industry.

Show 10 entries Search:

Name of company	Country	Website	Dry bulk services	Break bulk services	Liquid bulk services
Agent Plus	Serbia	www.agentplus-group.com	✓	✓	✓
Armaris Bevrachtingen BV	Netherlands	www.armarisbevrachtingen.nl	✓	✓	✗
Bavaria Schiffsahrts- und Speditions-AG	Germany	www.bavariaag.de	✓	✓	✗
BENSHIP Hungary Ltd.	Hungary	www.benship.hu	✓	✓	✗
BUSINESS OIL PLATFORM	United Kingdom	www.BusinessOilPlatform.com	✓	✗	✓
CFND	Serbia	www.cfnd.rs	✓	✓	✗
CSIKLI Shipping and Forwarding Ltd.	Hungary	www.csikli.hu	✓	✗	✗
Danu Transport GmbH	Austria	www.danu-transport.at	✓	✓	✓
Danube Logistics	Moldova	www.gifp.md	✓	✓	✓
Danube Shipping Management Service GmbH	Austria	www.dsms.at	✓	✓	✓

Showing 1 to 10 of 53 entries Previous 1 2 3 4 5 6 Next

Figure 5: Logistics service providers. Shipping companies are listed with all necessary data and are represented in the map.

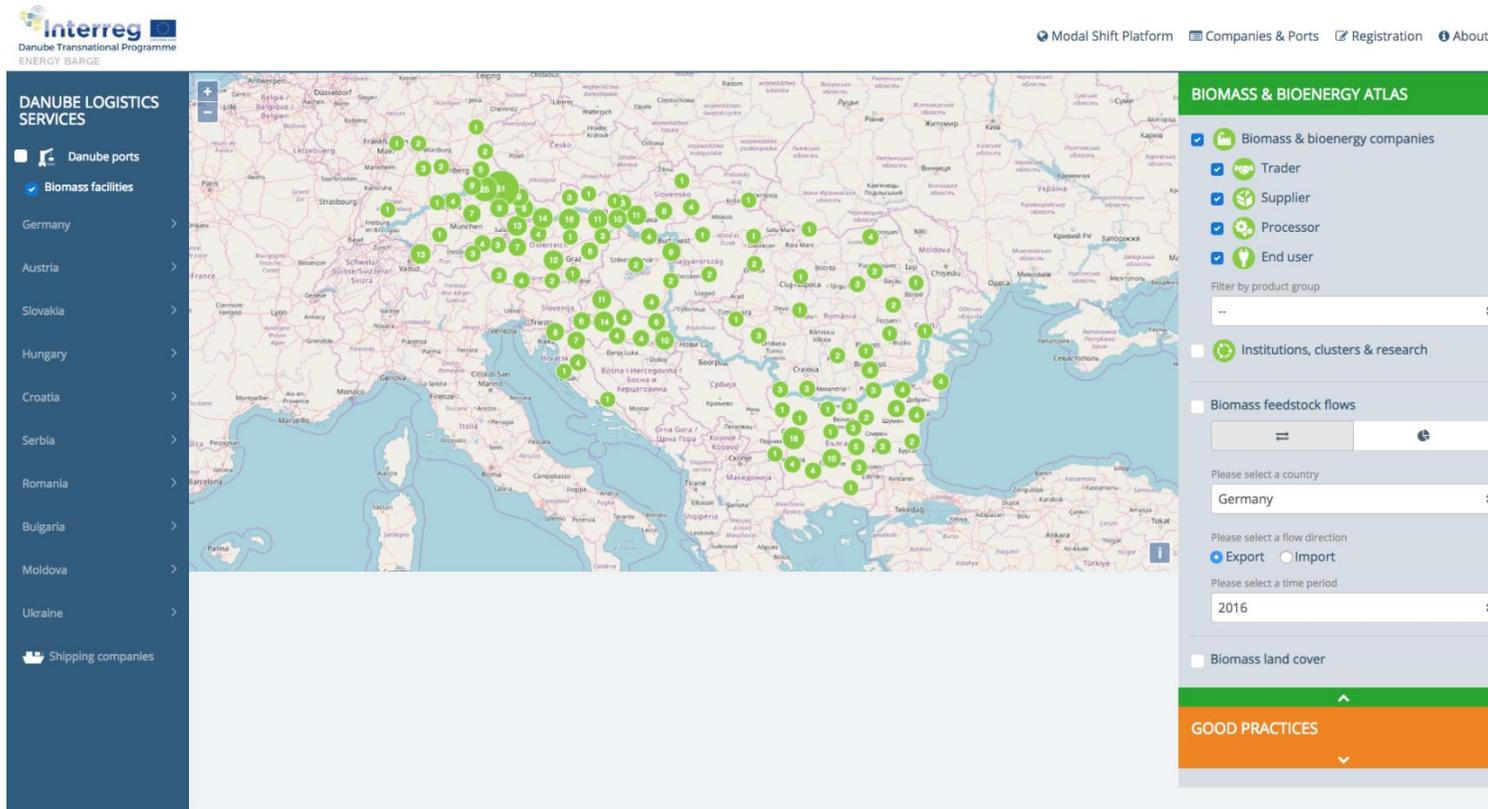
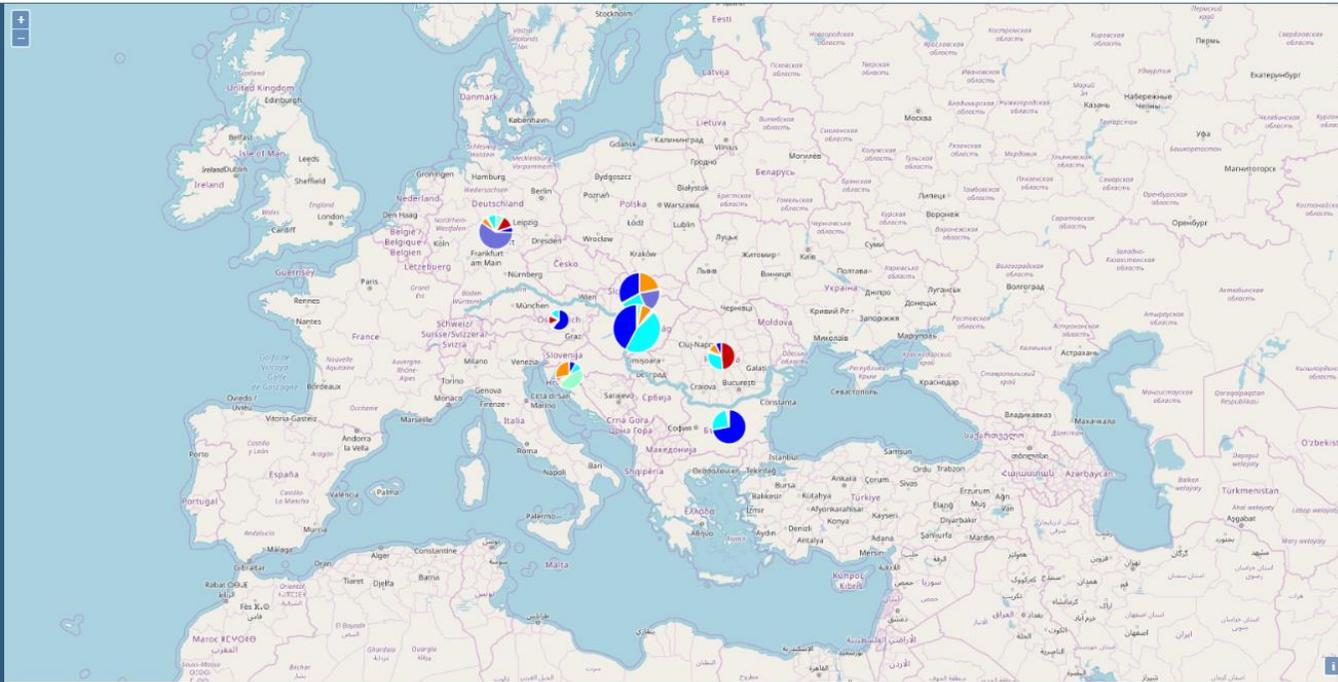


Figure 6: Biomass and bioenergy atlas. Various types of biomass companies can be chosen and are visualised dynamically on the map.

DANUBE LOGISTICS SERVICES

- Danube ports
- Biomass facilities
- Germany >
- Austria >
- Slovakia >
- Hungary >
- Croatia >
- Serbia >
- Romania >
- Bulgaria >
- Moldova >
- Ukraine >
- Shipping companies



Import/Export of biomass and bioenergy feedstock

- DURUM WHEAT
- WHEAT AND MESLIN
- RYE
- OATS
- TRITICALE
- FRESH SUGAR BEET

BIOMASS & BIOENERGY ATLAS

- Biomass & bioenergy companies
 - Trader
 - Supplier
 - Processor
 - End user
- Filter by product group:
- Institutions, clusters & research
- Biomass feedstock flows

Please select a country:

Please select a flow direction: Export Import

Please select a time period:
- Biomass land cover

GOOD PRACTICES

Figure 7: Biomass feedstock flows. The charts show detailed information about the amount of biomass trade.

>> Visit the Modal Shift Platform

Learn more about benefits and conditions of using the Danube for transporting biomass and bioenergy products and get insights into the Danube logistics and ports landscape in our Modal Shift Platform.



DANUBE LOGISTICS SECTOR

The Danube region is not only characterized by its strong biomass potential. Connecting 10 riparian countries, the Danube functions as a high-performance logistics axis, offering a natural infrastructure for inland waterway transport with specific relevance for the transport of bulk cargo.

Already today, agricultural and forestry products account for around 25 % of the total volume of goods (approx. 40 Mio. tons/year) transported along the logistical axis of the Danube. Ports and transshipment sites along the river function as hubs for handling, storage and processing. With the bio-based economy gaining momentum all over Europe, another growth market opens up for both the Danube region's biomass industry as well as for the Danube logistics sector. Especially for bio-based raw materials with the majority being categorized as bulk cargo in transport terms, Danube logistics can offer a broad set of facilities and services.

Therefore, encouraging a modal shift of biomass raw materials and products of the bioeconomy towards inland waterway transport and establishing Danube ports as prime hubs for the energetic and chemical-material use and trade of biomass are major goals of the ENERGY BARGE project. Such a modal shift at the same time contributes to the goal to increase transport on inland waterways by 20 % until 2020 as stated in the EU's Strategy for the Danube Region (EUSDR). Therefore, on this modal shift platform, the ENERGY BARGE project provides practical and first-hand information about logistics service providers and Danube ports facilitating biomass transport and handling. The online service gives insight into the most relevant framework conditions for transport, handling and storage of bio-based cargo, and enables cargo owners to inform themselves about the available logistics services along the Danube.



Bioenergy meets Danube logistics - Handbook for a modal shift towards inland waterway transport

The ENERGY BARGE project aims to better tap both the biomass and the logistics potentials of the Danube region in a sustainable manner. To this end, the consortium developed a set of tools that inform private and public actors along the potential supply chains and across country borders, give them practical guidance for business development and bring them together. Eventually, the entire Danube region shall profit from the more widespread and sustainable utilization of its transnational, yet domestic biomass. This handbook is one of these tools. It is designed for actors along the biomass and bioenergy supply and value chains which would like to have a "first peak" into the world of Danube navigation and what it has to offer.

Danube logistics have relevance for all these actors, from biomass suppliers, processing entities such as saw mills, traders of bio-based raw materials and bioenergy products, as well as end users. Based on expert discussions with relevant shipping companies, port operators and logistics service providers from Germany, Austria, Hungary, Slovakia and Croatia, the following chapters provide practical information for cargo owners. The focus lies on technical and administrative framework conditions for waterway transport, handling and storage of different types of bio-based cargo.

[ENERGY BARGE handbook](#)



Inventory of Danube logistics services for transport, handling & storage of biomass

In order to be able to plan transports on the Danube, potential users from the biomass and bioenergy markets need reliable information about the services offered by Danube logistics actors. Therefore, ENERGY BARGE has filed a comprehensive inventory list of Danube logistics service providers that are specialised on logistics requirements of the biomass and bioenergy industry.

The overall objective of this list, which is a project deliverable, is to enable an easy access to information on appropriate port and terminal operators as well as on shipping companies and ship brokers. By providing the contact data of suitable service providers (website) the effort for potential customers of Danube logistics is kept on a minimum. The deliverable is available here:

[ENERGY BARGE deliverables](#)



Logistics requirements of raw materials, intermediates and end products for the bioenergy industry

Logistics service providers and ports need to be aware of special cargo characteristics such as proneness to mechanical devices, moisture or other quality-reducing hazards. To provide a holistic overview, the ENERGY BARGE project has conducted a broad set of interviews and designed an overall assessment of logistics requirements for the transport of raw materials, intermediates and end products within bioenergy supply chains. Based on the results, existing potentials and investment needs in the involved ports were defined. The respective assessment document can be accessed here:

[Requirements for the bioenergy industry](#)

Figure 8: Subpage "Danube logistics sector". Offering supporting information and access to reports.

[>> Visit the Modal Shift Platform](#)
 Check out the potentials and feedstock flows along the Danube in our Modal Shift Platform



BIOMASS & BIOENERGY SECTOR

The Danube region has a theoretically high potential for biomass use, especially for energy purposes. In the Strategy for the Danube Region, utilizing the biomass potential for energy generation is highlighted as one important pillar in the strategy. Even an own [Danube Biomass Action Plan](#) has been drafted. On these pages, you find useful background information on different aspects of the biomass and bioenergy utilization in the Danube region as explored in the ENERGY BARGE project. Here, you can read up on the project reports which back up the modal shift platform tools.



Bioenergy markets - conditions, actors and demand

How advanced are the Danube countries in fulfilling their [National Renewable Energy Action Plans](#)? How does biomass contribute to the energy mix? What are the countries' strengths and bioenergy sectors with highest potential? Explore these and other information on national and transnational biomass and bioenergy markets in the Danube region and check out what they can do to improve EU renewables goals and sustainability. Read up on the market situation on the ENERGY BARGE compilation of national market study reports for Austria, Bulgaria, Croatia, Germany, Hungary, Slovakia and Romania.

[Market study reports](#)

How the potential of biomass in the Danube region will be used in the future and whether the bioenergy market will be a main user of this potential is unsure. It highly depends on how the demand for bioenergy will develop in the Danube countries and on the transnational energy market. A number of criteria are shaping this development. Also, differing developments can be assumed in the three bioenergy sectors electricity, heating/cooling and transport. In order to better project how the demand will materialize, an ENERGY BARGE demand scenario analysis of the bioenergy market has been set up.

[Read up on the three ENERGY BARGE scenarios soon here](#)



Sustainability

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. A number of instruments on multiple legislative, but also on voluntary industry levels have been introduced. In how far are these consistent and effective in ensuring sustainable use of biomass? And are countries acting differently in pursuing sustainability goals for biomass and bioenergy production? Answers to these and other question on the Danube-adjacent countries' national sustainability framework conditions and approaches to sustainability in the field of biomass and bioenergy production can be read up in our ENERGY BARGE report.

[Sustainability report](#)

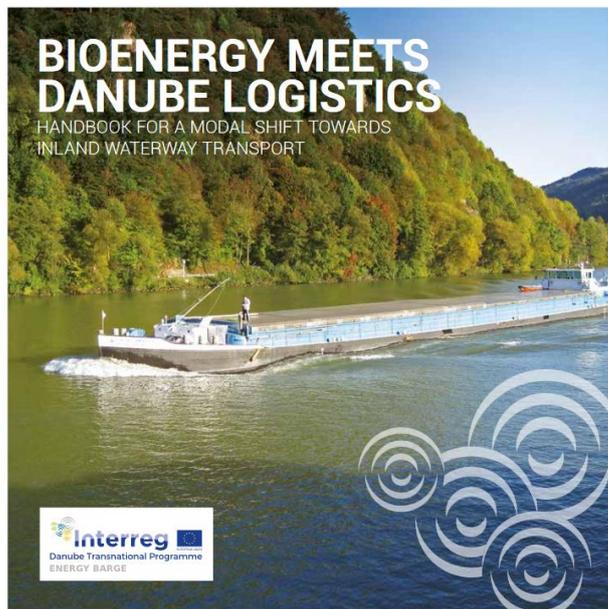


Feedstock flows and usage

Different types of biomass have a wide array of fields of application, regions of origin and location of usage. Therefore, all kinds of biomass are traded on a global scale. With the Danube region being one of the hotspots for biomass potential for different usages (food/feed, material use, energetic use), it is important to analyse in how far the transnational trade in biomass is performing within the Danube region. Based on EUROSTAT data, a first insight into flow directions on qualitative and quantitative level as well as in terms of direction has been analysed. Besides the visualization in the Biomass & Bioenergy Atlas, a background report provides deeper insight as well as an analysis of so-called Sankey-diagrams to further depict the usage of the different types of biomass.

[Feedstock flow report](#)

Figure 9: Subpage “Biomass & bioenergy sector”. Offering supporting information and access to reports.



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**IMPRINT**

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Project co-funded by European Union funds (ERDF)

~~~~~ Project co-funded by European Union funds (ERDF) ~~~~~

**Figure 10: The ENERGY BARGE Handbook.** The Handbook is available on the website.

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