

## Output Factsheet

**Output title:**

**Output 3.1 – Danube transnational biomass and bioenergy atlas**

**Summary of the output (max. 2500 characters)**

The Danube transnational biomass and bioenergy atlas is an online tool to improve energy security and efficiency. It is one of two ENERGY BARGE output tools visualizing the Danube biomass and bioenergy market, its actors and underlying supply and value chains. It will be integrated in the overall ENERGY BARGE modal shift platform for green bioenergy logistics in period 4 ([www.energy-barge.eu](http://www.energy-barge.eu)). The access data is provided in the annex document including technical/visual documentation (cf. Output 3.1 Evidence).

The atlas provides an easily navigable overview on the transnational biomass and bioenergy market for relevant market actors. The logic behind the atlas is to start with a comprehensive set of company entries but to allow for growth and development through the option for companies to register and to consequently provide a growing transnational market actor data base.

Its main elements are:

- a **dynamic map** view of the Danube region with zoom function based on open street map source;
- a specific **side bar menu** with selection functions to search for information layers and icons covering: biomass and bioenergy companies, institutions, clusters, research; import and export feedstock flow visualization of selected biomass types relevant for bioenergy production (flow directions, volumes, shares) per country and per year; biomass land cover layer based on CORINE spatial data; all functions and layers are visualized on the dynamic map and derive the information from a joint data base;
- a **sub-page “biomass and bioenergy sector”**: additional information and access to all relevant project deliverables including recommendations for market actors;
- **sub-pages “biomass and bioenergy companies”** and **“clusters, institutions and research”**: registered companies, their basic information on biomass feedstock used/bioenergy products produced, as well as option to register a/o update company information;
- Shared with the other output tools: landing page with general information.

In the atlas, the results/deliverables from all project activities in WP 3 are merged. The content was filed by all partners of WP 3 (BE2020, FNR; ICARST, NARIC, SDEWES, TCS, ARBIO, Nostra Silva), reviewed by the logistics partners, merged and prepared for output utilisation by WP leader BCG. DIT was responsible for programming, visualisation and data management incl. safeguarding of data protection regulations.

**Contribution to the project and Programme objectives (max. 1500 characters)**

The atlas tool contributes to ENERGY BARGE’s main objective, i.e. extend sustainable deployment of biomass for energy production through secure, efficient and sustainable supply chains for renewable raw materials along the river, and in particular to the two specific objectives SO1, map value chains and facilitate market uptake, and SO3, practical solutions,. The project directly addresses market actors in the bioenergy market. For an improved biomass and bioenergy product supply it offers the following functions :

- Transnational overview on market actors along the biomass and bioenergy supply chains in Danube-adjacent countries that provides easy options to look up and contact potential business partners, technology providers, and competitors with a view to improve supply chains;
- easy access to portfolio of Danube logistics and suitability for transport of different biomass and bioenergy products;
- overview of support institutions such as clusters to foster aspects of biomass sustainability and cooperation.

The atlas provides a basis of information and market actor data and allows a dynamic development of content and functionalities. By using the tool to identify new business partners for biomass supply, bioenergy generation and supply logistics, the overall Danube-wide company landscape profits, contributing to improved deployment of bioenergy in the region and thus improved energy security (as part of the programme objective).

**Transnational impact (max. 1500 characters)**

The transnational impact of the atlas tool is primarily ensured via its spatial coverage of all Danube-adjacent countries present in the Danube consortium. All data and information collected to develop the atlas (via the deliverables) are based on joint collection methodologies adhered to by all project partners. In this sense, a comparison of the activity, qualitative and quantitative state of regional and national company landscapes and markets is enabled. The tool enables first contact establishment with new business, project, logistics, and technology partners for multiple purposes within the Danube region. Moreover, the import and export flow functionality allows visualisation of transnational trade relations and an option for market actors to analyse new options for biomass supply and procurement.

Further, the transnational impact of the tool is safeguarded via the dissemination strategy. Firstly, the tool will be disseminated and tested/validated during the bioenergy site delegation exchange visits in periods 4 and 5 at three sites along the Danube. Secondly, it will be presented at the transnational final conference of the project. Additionally, the tool, as well as the entire ENERGY BARGE modal shift platform, has a trans-sectoral character, integrating the biomass, bioenergy, and Danube logistics sectors.

**Contribution to EUSDR actions and/or targets (max. 1500 characters)**

The ENERGY BARGE project with its cross-sectoral and transnational approach addresses two EUSDR priority areas (PA), namely:

- Priority Area 1A "To improve mobility and intermodality of inland waterways"
- Priority Area 2 "To encourage more sustainable energy"

The biomass and bioenergy atlas primarily addresses PA 2, and here, specifically, target 1, “helping to achieve the national targets based on the Europe 2030 climate and energy targets” as it aims to

improve regional, national and transnational cooperation between market actors along the biomass and bioenergy value chains. The tool also corroborates recommendations put forward in the Danube Region Biomass Action Plan by the Joint Research Centre and PA 2, mainly in the sense of visualising the strength of the company landscape along the Danube, locating areas of specialisation and visualising options for biomass supply.

#### **Performed testing, if applicable (max. 1000 characters)**

Until now, four testing measures with project-internal and external participants have been conducted. The testing addressed both technical and content-related aspects.

- Project-internal testing workshop January 2018, 3<sup>rd</sup> SCOM, Zagreb;
- Project internal testing workshop June 2018, 4<sup>th</sup> SCOM, Bucharest;
- Presentation to workshop participants June 2018, Bucharest;
- Telephone conference with ASPs and Advisory Group members incl. feedback e-mails, May 2018.

For these measures, a set of testing questions on content-, logic-, usability-, and technical aspects was designed.

The atlas was sent in project-internal feedback loops with targeted questions by the WP-leader(s) and DIT. Suggestions were implemented by DIT; In case technical realisation was not possible, alternatives were considered and elaborated.

The main testing and validation of this tool and the other 2 online tools are foreseen in the 3 delegation exchange workshops.

#### **Integration and use of the output by the target group (max. 2000 characters)**

The atlas is realized as an online-based tool in order to ensure easy, transnational and unlimited access by the target groups. Users provide feedback and help to improve the tool actively. The output functions as a multi-user tool. It is designed to be primarily used by 2 main private/market actor groups, namely the actors from the biomass and bioenergy sectors and the actors from the Danube logistics sector, i.e. SMEs, enterprises. Besides these groups, chambers of commerce and relevant associations have also been involved by the project partners during the design process of the output and the related deliverables.

The visualised data is also of relevance for multilevel public actors, e.g. regional planners or policy makers from regional and national authorities in terms of gaining an overview on the performance of their own region's as well as neighbouring regions' biomass and bioenergy markets, e.g. number, type, fields of activities of companies. Moreover, the additional detail information provided by the project's deliverable reports offers sets of policy and business development recommendations regarding the future development of the biomass and bioenergy markets and the harmonisation of framework conditions, e.g. regarding feedstock sustainability.

The output will be, in accordance with the work plan in the AF, an integral part of the project's output 4.1., the final overall modal shift platform for green bioenergy logistics. In the 3 site delegation exchange workshops, the tool will be tested and disseminated to representatives of the target groups in upper, mid and lower Danube region (Output 3.3.). Participation of relevant national stakeholders in the workshops lays in responsibility of the project partners.

#### **Geographical coverage and transferability (max. 1500 characters)**

The output covers the Danube-adjacent EU countries as represented in the project:

Germany (Bavaria, navigable Danube stretch), Austria, Slovakia, Hungary, Croatia, Romania, Bulgaria.

The reason for this geographical focus was, firstly, the feasibility and data access. The input necessary requires expert knowhow about certain regions and regional/national conditions along the biomass and bioenergy value chains. Even with the set-up as chosen, comparable data availability for all countries on biomass potentials, bioenergy and biomass actors, their roles in the supply chain and logistics flows were limited. Secondly, the ENERGY BARGE aims at bringing together the biomass sector with the inland waterway sector in order to enable identification of new business potentials. Therefore, the geographical scope needs to allow economically viable access to the Danube corridor and adjacent rivers.

The technical and systematic setup enables transfer to other regions beyond the Danube area. Firstly, an expansion along the important European waterways into other macro-regions, e.g. North-Sea, Rhine-area, along the biomass and bioenergy sector would be possible. Secondly, the concept could be transferred to other cargo types and value chains. Thirdly, the deployment sector of biomass feedstock can be widened to the chemical-material use of biomass in the sense of the bioeconomy. The relevance of inland waterway logistics for this sector is validated by experts in the project.

#### **Durability (max. 1500 characters)**

In case of the biomass and bioenergy atlas tool, the durability strategy comprises not only the atlas but also the other two online tools as part of the ENERGY BARGE modal shift platform.

At the project's beginning, BCG and VIA, representing the two relevant sectors merged in the project, declared their readiness to transfer the modal shift platform including the tools into their general activities and their websites after the project ends. This plan was kept in mind during the programming of the platform with respect to technical and legal aspects, but also in view on practicality and efforts required to keep the information presented maintained and up-to-date, excluding personal data, excel-based data input, utilization of publicly available data. In period 4, an integrated implementation plan for the modal shift platform including a durability strategy will present the detail measures taken to ensure the integration of the platform into the websites of BCG and VIA.

During the testing telephone conference with the ASPs and the Advisory Group in May 2018, first options to broaden the thematic coverage of the atlas towards the field of bioeconomy in the Danube region, e.g. in follow-up projects, were discussed.

BCG and VIA will ensure the durability of the project's output beyond the lifetime of ENERGY BARGE.

#### **Synergies with other projects/ initiatives and / or alignment with current EU policies/ directives/ regulations, if applicable (max. 1500 characters)**

The atlas tool per se is primarily designed for market actors and thus does not address EU policy aspects directly. However, the deliverables compiled in preparation of the output provide valuable policy recommendations, especially regarding the goal of a harmonized and comprehensive framework for sustainability of biomass used for energy and chemical/industrial purposes and supporting the implementation of National Renewable Energy Action Plans in the Danube region (Deliverables 3.1.1 and 3.1.3).

Gaining an insight into the biomass-related company landscape in the Danube region contributes to further developing the current EU endeavours towards an European biobased economy, emphasizing the role that the Danube region plays here. The integrated ENERGY BARGE Outputs 6.1 and 6.2 target the policy level and cover all policy- and regulatory-related aspects elaborated during the project lifetime.

During the feedback telephone conference, interest to use the tool's visualization approach for a sectoral expansion towards the biobased industry (bioeconomy, chemical-material use of biomass) which could create synergies with their current projects was stated. Moreover, the entire platform shall be featured on the [Danube-INCO.net](http://Danube-INCO.net) Platform as well as presented to the relevant PA steering committees once the platform is finalized and contains all project outputs.

**Output integration in the current political/ economic/ social/ technological/ environmental/ legal/ regulatory framework (max. 2000 characters)**

The output is targeting at market and political actors on regional and national level. The Danube region's economic and technological as well as geographical potential to be a key player in a European biobased economy and in the bioenergy market has been highlighted on several occasions, e.g. EUSDR, Danube Biomass Action Plan, Danube-Inco.Net, 4Biomass project, S2Biom project, Biomass Futures project. With a view on regulatory implementation, EU directives on renewable energies and sustainable biomass utilisation are in place, even though their transmission to national level and their overall role in economy and society are heterogenous both regarding sectors and types of bioenergy/biomass and countries (see Deliverables 3.1.1 & 3.1.3).

The biomass and bioenergy atlas allows a first evaluation of the market vitality in terms of quantity and types of market actors active, and a comparison on national and regional level. Furthermore, it integrates the aspect of transport and logistics. This can be seen as an important challenge for the establishment of a biobased economy creating rural development, jobs and added value. In this sense, the tool provides a contribution to foster market actor cooperation in the Danube region's bioeconomy. This is also valid for the goals for 2030 regarding utilisation of biomass for energy production and climate change mitigation.

During the preparation of the output, it became apparent that data availability on biomass and bioeconomy aspects on European level is still partly fragmented. Even with the set-up as chosen for compiling the output, homogeneous and comparable data availability throughout all countries on biomass potentials, bioenergy and biomass actors and their roles in the supply chain as well as logistics flows were limited. This indicates the need for further joint efforts on EU level to improve the data availability on biomass value chains.