



Mapping of EU Member States' / regions' Research and Innovation plans & Strategies for
Smart Specialisation (RIS3) on Bioeconomy

Task 3

Case Study Report Danube region

Contract: RTD/F1/PP-03681-2015

November 2016

T33

1. Short Regional Bioeconomy Profile

Name of the case region/country	Danube Macro-Region
Member States	AT, DE (Baden-Württemberg and Bavaria), HR, CZ, HU, SK, SI, BG, RO, BA, ME, RS, UA (Odessa, Uschhorod, Ivano-Frankiwsk and Czernowitz)
Bioeconomy Approach	In the Danube Region there are several strategies orienting the bioeconomy sector and several funding opportunities. Regional policies, considering the potential of the region to exploit the large biomass availability, mainly support biomass energy production and use. In the region several projects promote different bioeconomy aspects (biomass energy, agro-food, bioeconomy-related R&I)
Main Needs, Gaps and Bottlenecks	In the Region some efforts have already been made to remove obstacles hampering bioeconomy, but more projects of strategic dimension, a stronger involvement of the business sector, particularly of SMEs, still need to be supported.

2. Origin of Interest of the region in the Bioeconomy

The Danube Region with over 100 million residents is one of the most diverse territory in Europe from a socio-economic, cultural and geographical perspective. It mostly is located in Central and Eastern Europe (CEE) area and it covers EU Member States, enlargement and neighbourhood countries.

Table 1 – Danube Region countries

	Non-CEE countries	CEE countries
EU MSs	AT, DE (Baden-Württemberg and Bavaria)	HR, CZ, HU, SK, SI, BG, RO
Enlargement countries	–	Bosnia and Herzegovina (BA), Montenegro (ME), Serbia (RS)
Neighbourhood countries	–	Moldova (MD) and Ukraine (UA) (Odessa, Uschhorod, Ivano-Frankiwsk and Czernowitz)

The Danube area, making up one fifth of the EU's territory, comprises the Danube river basin and mountainous areas (such as the Carpathians, the Balkans and part of the Alps) hosting a variety of natural environment and rural landscapes.

Figure 1 – Danube Region



Source EUSDR website: <http://www.danube-region.eu/about/the-danube-region>

The economies of the region are strongly relying on SMEs, but they are still not able to fully exploit the existing potential because of the structural difficulties, lack of internationalization of their activities and internal disparities related to research and innovation field and intensity of the transfer of knowledge from the scientific sector

towards the exploiters. Disparities are observable both in terms of allocated resources but also in available structures and human resources.

According to the Interreg Danube Transnational Programme these disparities may be addressed by:

- an increased level of interconnectivity among actors,
- development of transnational level strategies in the field of innovation and better exploitation of smart specialization principles,
- increased flow of knowledge and information through transnational channels.

In order to foster the sustainable and inclusive growth in the area, several aspects of innovation (such as eco-innovation) should be focussed. In the Danube region there is the necessity to develop new approaches in terms of environmental technologies helping to create green jobs and provide sustainable progress for the area.

Since the majority of the countries in the region are importing the necessary energy, these new approaches should be primarily related to the energy issue. A good starting point for the macro-regional bioeconomy sector development is western part of the Danube Region that, despite having a high level of energy consumption, includes also leader countries in energy production (with important share of their energy generation resulted from the use of renewable sources).

In the region there is a significant potential regarding energy efficiency and renewable energy that is mainly linked to the large availability of natural resources in the countries (such as solid and gaseous biomass). This potential is not yet sufficiently exploited for several reasons e.g. because of a lack of strategies for better mobilising local energy sources, need for better infrastructure, etc.

Reducing energy needs and increasing the share of energy produced at local level (including small scale energy production) would be beneficial for all consumers in the region.

3. Bioeconomy profile and policy support

Considering the priorities of the main macro-regional policy documents available in the Danube region having a relevance for the bioeconomy sector (e.g. EUSDR, SEE2020), it is possible to assess that the macro-regional bioeconomy policy support is primarily oriented towards the promotion of the production and use of **renewable energy** (mainly from geothermal resources and biomass).

Despite this macro-regional common driver, each country in Danube region has its own specialization within the bioeconomy area: e.g. bio-based industries (HR), biorefineries (RO, BG), biotechnology (BA, RS, UA), biogas (BG, RO, UA), etc.

EU/national policy framework

Danube Region has to refer to the EU and national bioeconomy-related frameworks

EU strategies and regulations:

- Circular Economy Package “Closing the loop – An EU action plan for the Circular Economy 2015¹
- Marine Strategy Framework Directive 2008²
- A European Strategy for Sustainable, Competitive and Secure Energy³,
- EU Biomass Action Plan⁴,
- The EU climate and energy package⁵ – the EU 2020 targets,
- Renewable Energy Directive (RES Directive) 2009/28/EC and subsequent measures stating biomass related sustainability requirements,
- EU Timber Regulation⁶,
- Green Paper “A 2030 framework for climate and energy policies” COM/2013/0169 final

National strategies

Within Danube region only DE and AT have national strategies explicitly addressing the bioeconomy theme along the value chains: from primary production (Raw Materials Strategy 2010 DE ; Action Plan on Renewable raw materials 2015 AT), to conversion technologies (Biorefinery Roadmap 2012 DE; Research, Technology, and Innovation Strategy for biobased industries 2014 AT) and to R&I field (National Research strategy on bioeconomy 2030 (2010), Destination Bioeconomy – Research for a Biobased and Sustainable Economic Growth (2014) DE; Concept for a bioeconomy research strategy in Baden-Württemberg, Bioeconomy RTI Strategy AT). Other countries within Danube region have generic strategies partially dealing with the bioeconomy sector.

¹ COM/2015/0614 final. Communication from the Commission to the European parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – Closing the loop – An EU action plan for the Circular Economy.

² Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive)

³ Green Paper: A European Strategy for Sustainable, Competitive and Secure Energy COM(2006) 105 final

⁴ Biomass Action Plan COM(2005) 628 final

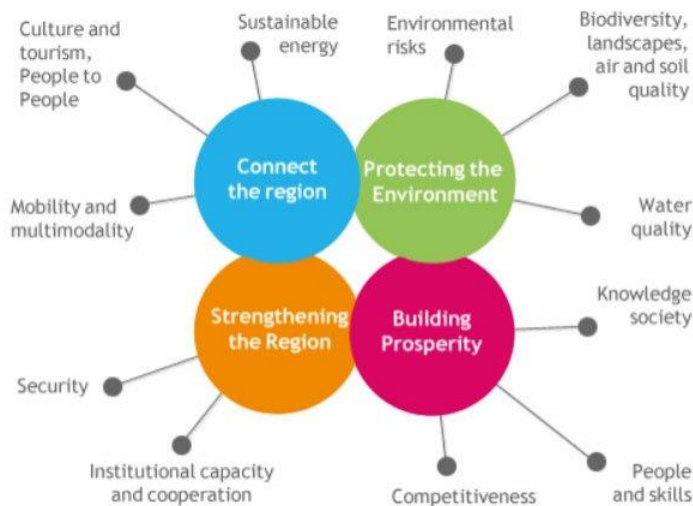
⁵ https://ec.europa.eu/clima/policies/strategies/2020_en#tab-0-0

⁶ Regulation (EU) No 995/2010

3.1 Danube Macro-region EUSDR Action Plan (2010)⁷

The main strategy driving the bioeconomy sector in the Danube Region is the EUSDR that covers all the countries of the Danube Region and seeks to create synergies and coordination between existing policies and initiatives taking place across the Danube Region. The macro-regional Danube Region Strategy addresses a wide range of issues, divided among 4 pillars and 12 priority areas.

Figure 2 – Overview of the EUSDR Priority Areas



Source: <http://www.danube-region.eu/about/priorities>

Besides a wide protection of the environment, EUSDR promotes the creation of an integrated and sustainable energy market (PA02⁸) coordinating the regional energy policies, enhancing the energy market integration of non-EU countries and facilitating cutting-edge technology developments. For the implementation of the EUSDR PA02 an Action Plan (Danube Region Biomass Action Plan) has been developed to support the realization of concrete steps (e.g. create synergies and coordination between existing policies and initiatives of the countries) encouraging the sustainable use of biomass.

Danube Region Biomass Action Plan (DRBAP)⁹

It contributes to the execution of three actions included in the EUSDR PA2:

- n.8 - *“To extend the use of biomass (e.g. wood, waste), solar energy, geothermal, hydropower and wind power”*,

⁷ COM (2010) 715: Communication from the Commission to the European parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – European Union Strategy for Danube Region

<http://www.danube-region.eu>

⁸ <http://www.danube-energy.eu>

⁹ <http://www.danube-energy.eu/the-danube-region-biomass-action-plan>

- n.11 – *“To explore the possibility to have an increased energy production originating from local renewable energy sources to increase the energy autonomy”*,
- n.16. – *“To facilitate networking and cooperation between national authorities in order to promote awareness and increase the use of renewable energies”*.

DRBAP provides a comprehensive analysis on the biomass potential, legal framework and regulatory environment of biomass utilization in the EUSDR countries. It also lists policy recommendations formulated to extend the use of biomass in the Danube Region. The Action Plan builds on already existing practices and success stories, which could serve as guidelines for future development.

3.2 Other strategies involving countries of the Danube Region

South–East Europe 2020 Strategy (SEE 2020)

It concerns the Danube Region just partially including BA, HR, ME and RS among its direct participants. The goal of the SEE 2020 Strategy is to improve living conditions in the region and enhance competitiveness and development, closely following the vision of the EU strategy Europe 2020 through 5 pillars comprising of 16 policy dimensions. The third pillar “Infrastructure and Environment” is dedicated to Sustainable Growth and envisages action aiming to enhance renewable energy consumption. Strategy SEE 2020 foresees regional energy cooperation activities through implementation of **Sustainable Energy Development Regional Initiative (SEDRI)**¹⁰ aiming to:

- improve the legislative, institutional and regulatory frameworks for the development of the sustainable regional energy sector;
- construct small–scale sustainable energy facilities in South–East and Eastern European countries;
- foster a framework for regional cooperation in the field of sustainable energy development, including awareness raising, support to decision making, education, cooperation in science and technology (e.g. Next Generation Biofuels have been considered as an option for a long term strategy related to eco–friendly renewable energy)

EU Strategy for the Adriatic and Ionian Region (EUSAIR) – 2014

It is a macro–regional strategy aiming at creating synergies and fostering coordination among all territories in the Adriatic–Ionian Region. Among the countries involved in EUSAIR there are several EU Member States (HR, SI) and non–

¹⁰ <http://www.cei.int/content/joint-cei-rcc-regional-initiative-sustainable-energy-development-launched-cei-headquarters>

EU countries (BA, ME, RS) of the Danube Region. EUSAIR, with reference to the bioeconomy sector, mainly promotes research, innovation and business opportunities in blue economy sectors and sustainable seafood production and consumption (Pillar 1).

3.3 Bioeconomy-related projects

In the Danube region several projects dealing with bioeconomy sector have been carried out in the last years or are being developed or have been programmed.

Within the framework of the EU Strategy for the Danube Region (EUSDR), besides the Action Plan (DRBAP), a **demo project website**¹¹ is constantly being developed with the aim to collect biomass projects which are considered as *best practices* from the countries of the Danube Region.

Figure 3 - Danube region biomass-related projects currently included in the Demo project database



Source: t33 elaboration on demo project website map

Other relevant bioeconomy-related projects, initiatives and proceed ideas involving entirely or just partially the Danube Region are listed below¹².

¹¹ <http://www.danubebiomass.eu>

¹² <http://www.danube-region.eu/funding/projects-and-initiatives>, https://danube-inco.net/cooperation_and_networking/projects

Project	Goals
<p>Strength2food: food quality for sustainability and health Project date: March 2016 – February 2021 Funding: H2020 (EUR 6 911 876,25 total cost) http://www.strength2food.eu</p>	<p>It assesses the impacts, exchanges knowledge and informs policy making on sustainable food chains</p>
<p>Partnership for Research and Innovation in the Mediterranean Area (PRIMA) Project date: January 2018 – December 2028 http://www.prima4med.org</p>	<p>It fosters joint research and innovation activities among Mediterranean countries, aiming at developing innovative and sustainable solutions in agriculture, food production and water provision, encouraging application by communities, enterprises and citizens.</p>
<p>Energytorrent: open-source renewable energy Project date: May 2013 – may 2017 http://energytorrent.org</p>	<p>It aims to make renewable energy technologies more affordable / accessible to small and medium businesses, local communities and homeowners via means of collective approach and community-driven development of open-source renewable energy technologies.</p>
<p>Communicating and bridging bioeconomy research to business Project date: March 2015 – march 2018 Funding: EC, H2020, KBBE Programme http://www.commbebiz.eu</p>	<p>CommBeBiz provides a bridge from bioeconomy research to business, and for social innovation. CommBeBiz works with FP7 and H2020 project partners at all stages of their ideas and research development to enable more effective and speedier transfer of knowledge to the marketplace, to policy-players and for the public good. This project targets five specialist bioeconomy segments: food, agriculture, fisheries, forestry and biotechnology.</p>
<p>Eureka initiative: strategic platform to promote European knowledge partnerships in food, feed and valorization of primary products Project date: September 2014 – September 2018 http://www.eurekanetwork.org/project/id/9159</p>	<p>By bringing together national agri-food clusters programmes in close connection with European platforms this network facilitates organisations within the agri-food sector to access knowledge and funds, find partners, enter new markets and build projects that lead to innovative products/processes/services.</p>
<p>European innovation partnership: agricultural productivity and sustainability Project date: February 2012 – December 2020 http://ec.europa.eu/eip/agriculture/</p>	<p>It aims to provide a working interface between agriculture, bio-economy, science, advisors, and other stakeholders at EU, national and regional level. It will help to bring innovative approaches faster from science to practice and to ensure a systematic feedback about needs from practice to the scientific community</p>
<p>Greenbow http://www.medgreen.eu/en/</p>	<p>Greenbow, part of the MEDGreen Cluster (RO), is the Network of Localised Loops of Trigeneration Energy Supply Services Based on Waste Biomass. Greenbow uses modularized, IT-enabled equipment</p>

	dedicated to reducing energy consumption and the carbon footprint by exploiting biomass residues, after processing and pelleting, in small- and medium-scale incineration installations that could produce heat, electricity and cold as per local needs.
--	---

3.4 Danube-INCO.NET

DANUBE-INCO.NET project is a coordination and support action addressing the official EU Strategy for the Danube Region (EUSDR) in the field of research and innovation (R&I). In particular it supports two EUSDR priorities: PA7 “Knowledge Society” and PA8 “Competitiveness”. Danube-INCO.NET is a macro-regional project that seeks to overcome obstacles hindering the social and economic development of the Danube region. In particular, it aims to support policy dialogue, to coordinate policies and to foster discussion among policy makers and between policy makers and other relevant stakeholders.

The project started in January 2014 and will be concluded in December 2016, it supports the coordination of multiple Science Technology and Innovation policy dialogue forums in the region and the implementation of the flagship initiative “Innovation Union of the Europe 2020 Strategy” and the implementation of the European Research Area (ERA).

Danube-INCO.NET has been funded by the EU FP7 7-INCO – Specific Programme “Capacities”: International co-operation, with a total cost of 2.3 M EUR (2 M EUR EU contribution)¹³. Overall 19 project partners (including 2 partners of IT and ES, see partner list in Annex I) are involved in the project under the coordination of the Centre for Social Innovation (AT).

Project structure and activities

The Danube-INCO.NET project is structured in 7 Work Packages (WP) contributing to 4 pillars. The **WP3** addresses two **H2020** selected societal challenges: “*secure, clean and efficient energy*” (in particular energy efficiency and renewable energy) and “*food security, sustainable agriculture, marine and maritime research and the **bio-economy***” combining a set of actions to increase networking and cooperation at transnational level (**WP3.1**). Moreover it aims to support to the “Environment and Energy” working group of **EUSDR PA8** exploring possibilities towards concrete pilots and implementation thereof in the form of pilot actions to be selected (**WP3.2**) and to implement a major Triple helix conference and brokerage events (**WP3.3**).

¹³ http://cordis.europa.eu/project/rcn/110010_en.html

Therefore **WP3** main goals are to assess the potential of the macro-region (and its sub-regions) for research and innovation in selected societal challenges, to identify the existing gaps and possibilities to overcome them, to strengthen the links between the actors in research and innovation (triple helix concept: business, academia, government), to facilitate clustering and exploit cross-border synergies.

Table 2 – Danube-INCO.NET project structure

Work Packages	Pillars
WP1 – Project coordination	–
WP2 – Supporting policy dialogue and Co-operation Platforms	1. Policy dialogue
WP3 – Tackling Societal Challenges: Energy Efficiency and Renewable Energy in a Bio-based Economy	2. Energy and Bioeconomy
WP4 – Analysing R&I Cooperation	3. Analysis
WP5 – Strengthening Co-operation	–
WP6 – Joint Funding	4. R&I support initiatives
WP7 – Public Relations and dissemination	–

Project results

So far the WP3 has produced some tangible/intangible bioeconomy-related results:

- A constantly-updated **database**¹⁴ on stakeholders active in the field of energy efficiency, renewable energy and the bioeconomy has been set up. This tool can be used to enhance networking to foster exchange of information within and across different sectors. In the database are included short profiles (and links) of regional development and energy agencies, associations, companies, NGOs, clusters and networks, universities, research institutes, chambers of commerce and industry, public bodies, government entities, international organisations already active or willing to cooperate in the field of energy efficiency, renewable energy and the bioeconomy in the Danube Region. Registered subjects can benefit from receiving Energy & Bioeconomy news on relevant events (e.g. on clustering/networking), calls for funding or cooperation opportunities and of the Danube-INCO.NET Alert Service.
- Several **Reports**:

¹⁴ https://danube-inco.net/cooperation_and_networking/organisations?_search_field=title&_search_word=&_individual_filter_country=0&_individual_filter_type=0&_individual_filter_scifi=0&_individual_filter_geofocus=0&_individual_filter_affiliation=8&_order=create_date&_order_desc=1

- A Report on available funds for promoting energy efficiency in the Danube Region (D3.10)¹⁵
- A Report on the working group "Environmental Technologies and Energy Efficiency" and the clustering workshops, recommendations, and follow-up (D3.20)¹⁶. This report, due to its complexity has been split into three components:
 - Report on the EUSDR PA8 WG on Environmental Technologies and Energy Efficiency based on the participation of the Danube-INCO.NET consortium in the meetings of the Working Group (D3.20-1);
 - Report on the 5 Clustering Workshops events organized in the context of WP3, task 2 (D3.20-2): the first 3 Workshops were organized to promote the development of networks of institutions with similar objectives and backgrounds in the fields of energy efficiency, renewable energy and bio-economy in the Danube Region. Each Workshop focused on a specific existing tool for cooperation active also in the bioeconomy field:
 1. the European Research Infrastructure Consortium (ERIC),
 2. the European Technology Platform (ETP),
 3. the Knowledge and Innovation Community (KIC).
 Moreover two additional workshops (the Triple-Helix-Conference on Bio-based Economy and the Brokerage event) were organized to promote the creation of further clustering and networking.
 - Report summarising the inputs received from the EUSDR PA8 working group "Environmental Technologies and Energy Efficiency", the results achieved in the Clustering Workshops and in the Brokerage/TripleHelix events and the recommendations for future and sustainable cooperation (D3.20-3);
- **Global Bioeconomy Summit**¹⁷ (event date: 25-26 November 2015) has been the first community building platform to discuss bioeconomy policies (food security, sustainable development, economic growth and the conservation of scarce natural resources) globally. This event aimed to identify challenges and opportunities to integrate bioeconomy theme in wide innovation and sustainable development agendas and in future-oriented public debates. The summit has resulted in recommendations in view of global governance and international cooperation.
- 6th CASEE¹⁸ **Conference** "Latest trends in bioeconomy in Danube Region" (event date: 24-26 May 2015) on several bioeconomy related issues such as

¹⁵ <https://danube-inco.net/object/document/14846>

¹⁶ <https://danube-inco.net/object/document/17208>

¹⁷ <https://danube-inco.net/object/event/15646>

¹⁸ Central and South Eastern Europe: <http://www.casee2015.uniag.sk>

sustainable development, bio-resource engineering, ecosystem management, etc. It aimed to promote research and development activities in Nutrition and Food Sciences, to provide excellent opportunity to network, share ideas and form partnerships, to promote scientific information interchange between researchers, developers, engineers, students, and practitioners working in the Danube region and other European countries.

- As a direct result of the first 3 Clustering Workshops, nine proposals for Pilot **Actions** were elaborated within WP3, out of which two selected for funding in 2016 to promote concrete transnational cooperation in the field of Energy Efficiency and Renewable Energy and for the development of bio-economy. The selected PAs were considered as capable to generate tangible results in support to the implementation of the EUSDR.

Pilot Action 1 – Toward a Danube bioeconomy RTI Strategy for appropriate regional added value chains	
Aim	<p>The pilot action of Danube-INCO.NET aimed at supporting and developing a bioeconomy RTI-strategy and a related research and innovation agenda for the Danube Region.</p> <p>In particular the Pilot Action specific goals were:</p> <ul style="list-style-type: none"> - to map the bioeconomy-related, national policy initiatives and strategies, discuss key challenges, further needs and requirements to develop bioeconomy RTI strategies - to identify relevant stakeholders to implement a bioeconomy RTI agenda in a multi-actor approach - to lay the basis for coming steps and processes
Partners	BIOS Science Austria, University of Natural Resources and Life Sciences (BOKU), ICA-CASEE Network.
Project duration	Project started on January 1, 2016, overall duration: 10 months
Funding	50.000 € from FP7 2007–2013
Activities	<ul style="list-style-type: none"> - Discussion of current ongoing activities related to the wider bioeconomy agenda in the Danube Region - Identification of relevant stakeholders in the Danube Region to implement a multi-actor approach in relation to the bioeconomy RTI agenda - Development of a position paper “Towards a bioeconomy RTI strategy in the Danube Region”¹⁹ on bioeconomy strategies in the Danube Region aiming at mapping bioeconomy related policies in the Danube Region and at supporting the initiation of national RTI bioeconomy strategies.

¹⁹ https://danube-inco.net/object/news/17636/attach/Feichtinger_pilot_action_1.pdf

	<ul style="list-style-type: none"> - Danube-wide virtual stakeholder consultation to collect input to the research agenda - The pilot action included three strategy workshops 	
Priority fields of action	Action I – procedures	<ul style="list-style-type: none"> - Raise awareness for grand societal challenges to enable behavioural change and transition to bioeconomy - Improve communication with NGOs and the general public - Modernisation and harmonisation of curricula - Promote good / best practice examples - Database of bioeconomy relevant data, tools and methods
	Action II – contents	<ul style="list-style-type: none"> - Mapping the sustainable bio-energy potential of the region - Analyse the impacts on the climate, agriculture, soil fertility, biodiversity, water use and sustainability - Development of harvest and storage machinery that allows the sustainable off-take of crop residues and preserves soil fertility - Optimize feedstock transport logistics (e.g. biomass transport on the Danube River) - Comparing and assessing the techno-economic efficiency of different technological options (e.g. bio-energy and novel bio-refinery systems) - Risk management associated with climate change - Involve social sciences to address the acceptance of novel technologies, consumer preferences and behavioural changes for developing a sustainable low carbon economy
Results	<ul style="list-style-type: none"> - The position paper that has been discussed and commented through an online consultation with relevant stakeholders. - Stronger macroregional dialogue and cooperation - Strengthened the ICA CASEE network - List of stakeholders able to promote RTI bioeconomy in the region 	

Pilot Action 2 – Building a bioeconomy research and advocacy network in the Danube region (DANUBIONET)	
Aim	It intends to foster the development of sustainable energy towards a bio-based economy, with a particular focus on the Middle Danube area and on biomass feedstock from agricultural and forestry activities + organic industrial by-products
Partners	This pilot action was presented by Pannon Pro Innovations Ltd with partner CEI – Central European Initiative.
Activities	- Online “Bioeconomy capacity building survey” to identify

	<p>challenges and gaps hindering the full-scale deployment of bioeconomy in the targeted area (Climate KIC Biohorizons project methodology)</p> <ul style="list-style-type: none">- Organization of two networking events addressing the bottlenecks mapped through the online survey- Enhancing the creation of the basis for the establishment of a Danube Region bioenergy/bioeconomy network
--	---

4. Available funding for promoting bioeconomy in Danube Region

As mentioned above, within the WP3 of the Danube-INCO.NET project a report²⁰ on available funds for promoting energy efficiency in the Danube region has been published in 2015.

The report provides information on opportunities to access funding that allows stakeholders to implement target oriented sustainable R&D and innovation projects necessary to establish networks on energy efficiency and renewable energy in a bio-based economy. In respect to those listed in the report some additional H2020 bioeconomy-related funding sources (not strictly related with energy issues) have been included in the table below.

Available funds	
Horizon 2020	<p>Bioeconomy is referred to in different sections of the Horizon 2020. In the “Societal Challenges” section, there are several relevant Programs:</p> <ul style="list-style-type: none"> • Program “Secure, Clean and Efficient Energy”²¹. Its Work Programme 2016–2017 –similarly to the WP of the 2 previous years– includes several bioeconomy-related thematic priorities under two Calls: <ul style="list-style-type: none"> - “<i>Energy efficiency</i>”: e.g. promoting the use of renewable energy in heating/cooling systems, engaging consumers towards sustainable energy, etc. - “<i>Competitive low carbon energy</i>”: e.g. promoting the development of next generation of renewable energy technologies, their demonstration and their uptake by the market, fostering international cooperation in the area of renewable energy, supporting Joint Actions to foster innovative energy solution in renewable energy technologies, etc. • Program “Climate Action, Environment, Resource Efficiency and Raw Materials”²² promoting in its work Programme 2016–2017 a greener economy (e.g. through bio-based raw materials production) • Program “Food Security, Sustainable Agriculture and Forestry, Marine, Maritime and Inland Water Research and the Bioeconomy” (in its WP includes 2016–2017 calls on sustainable food security, on blue-growth, bio-based innovation for sustainable goods and services and the support to the development of a European Bioeconomy) <p>The H2020 section “Industrial Leadership” refers instead to the key enabling technologies (KETs) and promotes innovation in SMEs and the</p>

²⁰ <https://danube-inco.net/object/document/14846>

²¹ <https://ec.europa.eu/programmes/horizon2020/en/h2020-section/secure-clean-and-efficient-energy>

²² <https://ec.europa.eu/programmes/horizon2020/en/h2020-section/climate-action-environment-resource-efficiency-and-raw-materials>

	<p>development of nanotechnologies, advanced materials, advanced manufacturing and processing and biotechnology.</p> <p>Finally, Horizon 2020 also supports Joint Technology Initiatives (JTI) which are public-private partnerships between industry and the European Commission where partners co-fund specific calls on the topic. The most bioeconomy-related JTI is “Bio-based Industries” (BBI)²³</p>
EUREKA	<p>It is an intergovernmental organisation for market-driven industrial R&D facilitating the coordination of national funding on innovation for the productivity & competitiveness of European industries. Below are listed the main components of EUREKA that are relevant for Danube-INCO.NET project:</p> <ul style="list-style-type: none"> • EUREKA Clusters²⁴ are long-term, strategically significant public-private partnerships (e.g. Eurogia2020 promoting transnational, low carbon energy technology projects) • EUREKA Umbrellas²⁵ are thematic networks focussing on a particular technology or business sector. Their goal is to generate and support R&D projects in their specific field of operation (e.g. EuroAgriFoodChain 2²⁶). • EUREKA’s Eurostars Programme²⁷ is a joint programme between EUREKA and the EC specifically dedicated to stimulate research-performing SMEs to lead international collaborative research and innovation projects.
COST	<p>It is an intergovernmental framework consisting in 36 Member Countries (AT, BA, BG, HR, CZ, DE, HU, ME, RO, RS, SK, SI within Danube region) and a Cooperating State (Israel). It allows researchers from these countries to participate in science and technology networks called 'COST Actions' (e.g. ESSEM COST Action “European network for algal-bioproducts”).</p>
ETC Programmes	<ul style="list-style-type: none"> • Interreg programmes: <ul style="list-style-type: none"> - Central Europe Programme²⁸ 2020 (interesting AT; DE, HR; CZ, HU, SK and SI of the Danube region) supports regional cooperation among central European countries. It aims to enhance innovation and knowledge development, the use of renewable energy, sustainable use of natural resources. - Danube Transnational Programme²⁹ (DE, CZ, AT, SK, HU, SI, HR, RO, BG, RS, BA, ME, UA, MD) promotes economic, social and territorial cohesion in the Danube Region through policy integration in selected fields. It aims to enhance innovation and sustainable development.

²³ <http://bbi-europe.eu>

²⁴ <http://www.eurekanetwork.org/eureka-clusters>

²⁵ <http://www.eurekanetwork.org/eureka-umbrellas>

²⁶ <http://www.euroagrifoodchain.eu>

²⁷ <https://www.eurostars-eureka.eu>

²⁸ <http://www.interreg-central.eu/Content.Node/home.html>

²⁹ <http://www.interreg-danube.eu>

	<ul style="list-style-type: none"> • IPA Programmes (Danube region beneficiary countries: BA, ME, RS) • ENPI Programmes (UA, MD)
Other	Bioeconomy is also supported in the Danube region by national/regional ESIF Programmes, bilateral programmes, bilateral and multilateral cooperation schemes, grants through Central European Initiative and other multinational cooperation fora (Visegrad 4, etc.), Erasmus+, CEEPUS, etc.

5. Needs, Gaps and Bottlenecks to Deploy the Bioeconomy

The main general obstacles existing in the Danube Region and restraining the deployment of the bioeconomy sector are:

- the low level of cooperation at the macro-regional level,
- the lack of public and political awareness of the bioeconomy,
- the knowledge gap between research and regional stakeholders and
- the low social acceptance of novel products and processes.

Within the Danube-INCO.NET project a survey³⁰ on stakeholders has been designed to spotlight in detail the main challenges and bottlenecks of the development of bio-energy and bioeconomy in the Danube Region and to propose solutions from the point of view of the public sector, research and academia and businesses.

Although some efforts have already been made to remove obstacles hampering bioeconomy (e.g. through the Danube-INCO.NET project), more projects of strategic dimension, a stronger involvement of the business sector, particularly of SMEs, still need to be supported in the region.

6. Information Sources

Relevant websites:

Danube-INCO.NET

<https://danube-inco.net>

Danube Region Strategy (EUSDR)

<http://www.danube-region.eu>

Danube Region Biomass Action Plan (DRBAP)

<http://www.danube-energy.eu/the-danube-region-biomass-action-plan>

Sustainable Energy Development Regional Initiative (SEDRI)

<http://www.cei.int/content/joint-cei-rcc-regional-initiative-sustainable-energy-development-launched-cei-headquarters>

EUSDR Demo project database on biomass projects

<http://www.danubebiomass.eu>

³⁰ Main findings of the survey will be presented on the workshop "Energy Networking4Innovation" on 30 November 2016.

7. Annex I

	Country	Danube_INCO.NET project partners
EU MSs	AT	- Centre for Social Innovation (ZSI) - Austrian Research Promotion Agency - Federal Ministry of Science, Research and Economy
	DE	- German Aerospace Center – DLR Project Management Agency - Federal Ministry of Education and Research - Steinbeis Innovations GmbH
	HR	- EKO-SUSTAV waste management LTD
	HU	- Regional Centre for Information and Scientific Development Ltd
	SK	- Business and Innovation Centre (BIC) BRATISLAVA SPOL. S.R.O.
	SI	- Ministry for Education, Science and Sport
	BG	- University of Ruse “Angel Kanchev”
	RO	- Ministry of National Education
	IT	- Central European Initiative – Executive Secretariat
	ES	- European Commission – Joint Research Centre – Institute for Prospective Technology Studies
Enlargement countries	BA	- Ministry of Civil Affairs
	RS	- Mihajlo Pupin Institute - University of Novi Sad
Neighbourhood countries	MD	- Centre of International Projects of the Academy of Sciences of Moldova
	UA	- Institute of Market Problems and Economic & Ecological Research of the National Academy of Science