



BIOECONOMISING THE DANUBE REGION

Results and experiences
distilled from the GoDanuBio project

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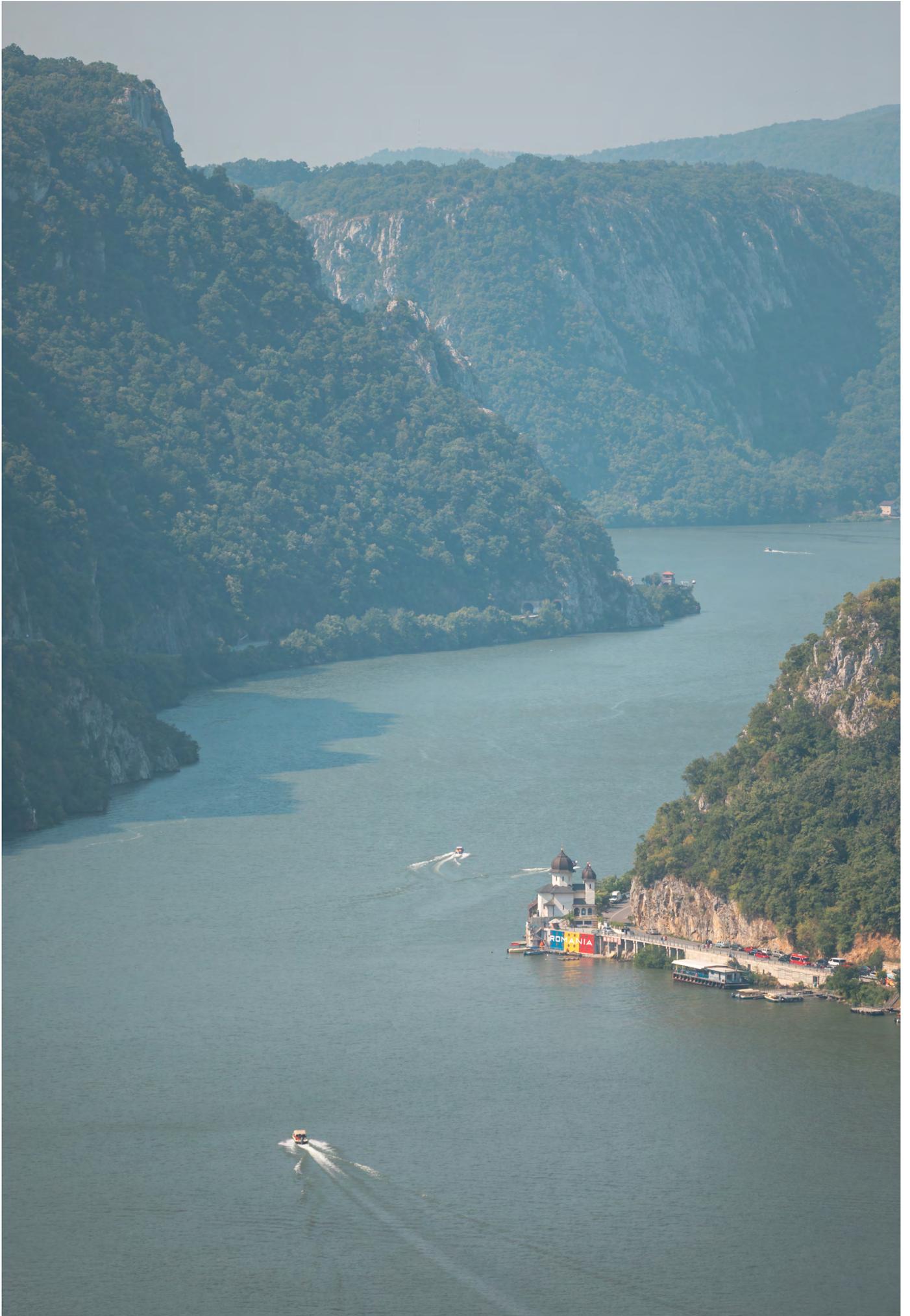
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GoDanuBio was conceived - metaphorically speaking - as a *spin-off* of the DanuBioValNet project (Interreg Danube Transnational Programme; 2017-2019). There, a long-standing and trusty network of Ministries and cluster organisations was established in order to identify and mobilise bioeconomy stakeholders in the cross-regional value chains across the Danube territories. Keeping track of the findings of the previous project, GoDanuBio set even more ambitious goals: leveraging some of these findings at the policy support level, while involving more local authorities in a macro-region with huge potential for bioeconomic and social transformation.

The new approach was not that easy, knowing in advance that bioeconomy policy developments in the Danube macro-region, with its opportunities and drawbacks, take their time. The BIOEAST Initiative¹ - that covers seven of the countries represented in the partnership and has a strong back-up of the Visegrad Group and the European Commission – already showed since its founding in 2015 that the path towards the bioeconomy in the Eastern part of Europe is meant to be a long-term process.

As mentioned, the new partnership should also highlight the role of the local and regional authorities, taking proper notice of the larger multi-level governance approach of the updated EU Bioeconomy Strategy (2018). But that was not all, the proposal should interlink other concepts around the bioeconomy, that was the central topic dealt by DanuBioValNet: demographic change, sustainable rural development, urban-rural interactions and multi-level governance entered in the topic mix.

GoDanuBio was consequently a product of the times: the last phase of the Danube Transnational Programme (2014-2020) with still unsolved demographic challenges and the introduction of the European Green Deal at the end of 2019. The exercise was at times arduous, possibly due to the lack of an integrated vision by some of the contenders and addressees, but contributed surely to prove how interlinked these concepts are. It aimed to show the need for a systemic view at cross-ministerial and -departmental level when it comes to promote and deploy policies on circular bioeconomy² and sustainable rural development. That may have been achieved, or at least initiated, in some participating regions and countries through this project.

¹ <https://bioeast.eu/>, last accessed 7/12/2022

² The principles of the circular economy are included in this term. Bioeconomy is not circular by nature, this is why circular economy and bioeconomy are combined in this definition. This will be followed throughout the whole text.

The following infographic is intended to help the reader to understand the whole picture of the project:

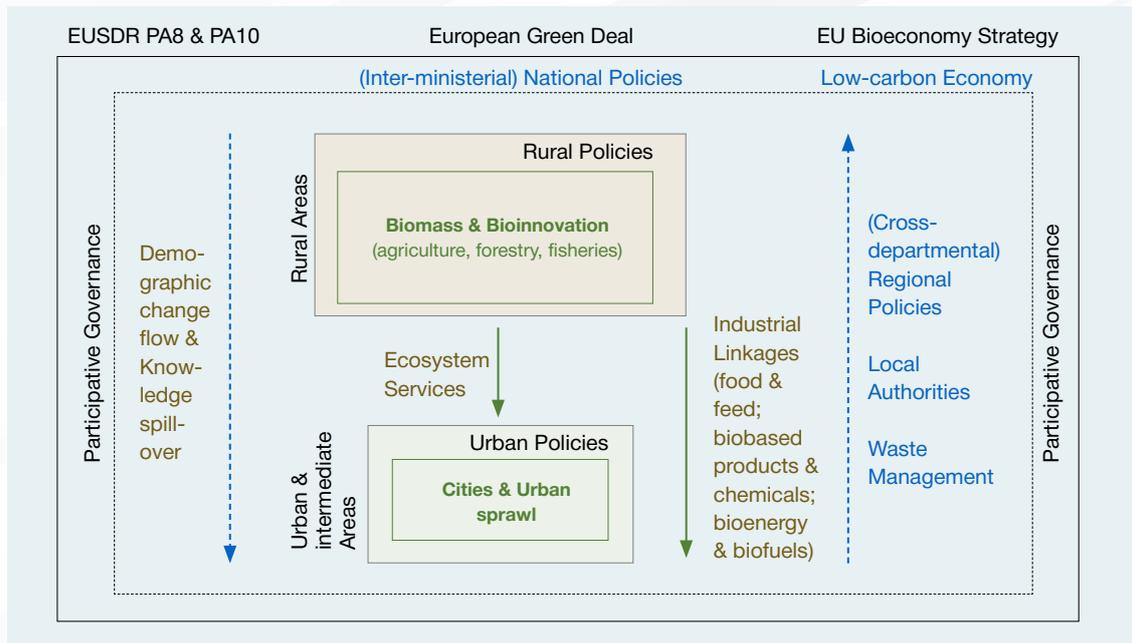


Figure 1: Intervention logic of the GoDanuBio project (BIOPRO Baden-Württemberg GmbH, authored by Sergi Costa)

2.1. Policies at the macro-regional level related to GoDanuBio's domain

The EU Strategy for the Danube Region (EUSDR³, European Commission, revised Action Plan from 2020) is a macro-regional strategy for the Danube Region, which was launched by the European Commission in December 2011. The strategy was developed jointly by the European Commission and various countries and stakeholders, and is intended to create synergies and coordination between existing policies and initiatives⁴. Within the macro-regional strategies, it is the largest and most diverse, involving nine EU member states (Austria, Bulgaria, Croatia, Czech Republic, parts of Germany, Hungary, Romania, Slovakia and Slovenia), three Accession Countries (Bosnia and Herzegovina, Montenegro and Serbia) and two Neighbouring Countries (Moldova and Ukraine)⁵.

The EUSRDR has five strategic objectives and the first two are relevant to the aim of GoDanuBio. The **first objective (“Counteracting Climate Change”)** can be tackled by the bioeconomy, since this societal and economic model aims at reducing the use of fossil resources. By using biomass as a feedstock, additional CO₂ emissions can be prevented from being added to the atmosphere, as only plant-bound CO₂ is released. In addition, the circular economy - to which some participating countries contribute with some policies - helps to reduce emissions in general; a key component of this is the reuse and recycling of materials. With regard to the **second objective (“Stimulating Sustainable Development”)**, the bioeconomy can support sustainable development or even enable it. Through the circular (bio-)economy, resources can be used in a more sustainable way. This can also be ensured via appropriate communication and awareness-raising.

The field of bioeconomy refers to many sectors and different types of applications. In this regard, GoDanuBio contributed consistently to the appropriate progress of four different pillars of the EUSDR, namely, 1) Connecting the region; 2) Protecting the environment; 3) Building prosperity; and 4) Strengthening the region. Below it is described how the project contributed to each pillar:

Pillar 1: Connecting the region through supporting the **Priority Area 2 (“Sustainable Energy”)**. Action 2 from PA 2 (“To promote energy efficiency and use of renewable energy in buildings and heating systems”) can be directly applied to the use of biorefineries; ideally, waste heat from other unit operations or energy from a biogas plant is directly used. Low-carbon technologies (PA 2, Action 4) also fall within the scope of the bioeconomy.

³ <https://danube-region.eu/wp-content/uploads/2020/04/EUSDR-ACTION-PLAN-SWD202059-final.pdf>, last accessed 7/12/2022

⁴ <https://danube-region.eu/about/>, last accessed 7/12/2022

⁵ https://ec.europa.eu/regional_policy/en/policy/cooperation/macro-regional-strategies/danube/, last accessed 7/12/2022

Some of the good practices pointed out by the GoDanuBio partners were related to bioenergy, which shows that in some of these regions the notion about bioeconomy is still strongly linked to energy topics, while somehow the cascading use approach is missed. Keeping in mind that in some of these countries the share of energy is mainly coal-based, the transition to renewable energies and to what degree the bioeconomy transition can contribute to this should be properly advised and monitored.

Pillar 2: Protecting the environment: The Action Plan of the EU Bioeconomy Strategy (2018)⁶ proposes a three-tiered plan based on priorities. The third priority is related to “Understand the ecological boundaries of the bioeconomy”, in which enhancing biodiversity and monitoring progress of the bioeconomy are among the actions listed. **Priority Area 6 (“Biodiversity and Landscape, Quality of Air and Soils”)** of the EUSDR and its Action 2 (“Build capacities of national and local authorities, non-governmental organisations, expert and scientific community in the environment related matters”) should also be mentioned. Especially with regard to the bioeconomy, it is important that all actors are involved in the protection measures and that a transfer of knowledge is guaranteed.

Assessing and monitoring the environmental performance of some of the best practices presented during the project⁷ was not part of the scope of the project. Nonetheless, some of the supported initiatives – e.g. through capacity building activities – like the Landscape Recovery Programme in the Kosice Region⁸ should assure a better level of biodiversity in that region at mid-term.

Pillar 3: Building prosperity through research and innovation, that are of great importance for the bioeconomy sector, which is constantly developing and unfolding. **Priority Area 8 – PA8 (“Competitiveness of enterprises”**, Action 1) is working on this area; funding programmes, capacity-building and digitisation as horizontal topics are important ingredients for SMEs to support the bioeconomy transition in the Danube Region, which is collated to Actions 2 and 3 of this Priority Area⁹.

GoDanuBio was related to PA8 through all its implementation, due to the participation of one of its co-ordinators (located at the Ministry of Economy and Sustainable Development of Croatia) and some of its current members (e.g. ClusterAgentur Baden-Württemberg, CLUSTERO and Croatian Wood Cluster). There was continuous support from the Ministry of Economic Affairs, Labour and Tourism of Baden-Württemberg, which is co-leading this Priority Area. Events like the PSG Meeting in Zagreb (October 2021) and the PSG Meeting in Ulm (June 2022) were a good chance to personally interact with other members of PA8 and look for synergies with them.

⁶ [The European way to use our natural resources: action plan 2018](#), last accessed 7/12/2022

⁷ The Best practice brochure “The mobilization of actors for the circular bioeconomy” can be downloaded at <https://www.interreg-danube.eu/approved-projects/godanubio/outputs>, last accessed 13/12/2022

⁸ Green Catalogue, Agency for regional development support Košice, 2022. At the date of writing only available in Slovak: <https://www.arr.sk/zeleny-katalog/>

⁹ <https://competitiveness.danube-region.eu/wp-content/uploads/sites/4/sites/4/2021/12/Digital-leaflet.pdf>, last accessed 7/12/2022

Pillar 4: Strengthening the region through the **Priority Area 10 – PA10 (“Institutional Capacity and Cooperation”)**. This is on strengthening institutional capacities to improve decision-making and administrative performance, and to increase the involvement of civil society and local actors for effective policy-making (footnote 3). Since the field of bioeconomy is a multi-sector and multi-application field of work, this multi-level approach and inter-ministerial collaboration is crucial for successful implementation. These specific reasons make capacity-building so important for the transition to the bioeconomy.

GoDanuBio established contact with the coordinator of PA10 in spring 2022, but no specific joint activity was planned during the last phase of the project. More than 40 activities were planned and implemented regionally and locally related to participative governance, which resulted in a kind of living labs contribution to this Priority Area.

Last but not least, the introduction of the **European Green Deal** since November 2019 and all the policy packages that have been disclosed during the last three years had a remarkable influence on the political environment of this macro-region and Europe in general. The transition towards a more sustainable and circular use of biological resources has become one of the Union’s core tasks and this process has been embedded in the implementation of GoDanuBio.

2.2. Challenges and opportunities through the capitalisation of EU-funded projects

GoDanuBio contributed remarkably to the understanding of concepts such as (circular) bioeconomy, urban-rural interactions and sustainable rural development in the participating regions. Several multi-actor activities deep dived into these concepts and contributed to a healthier planet. Nonetheless, there are several **challenges** that lie ahead of the regions in the field of circular bioeconomy.

First, the concept of bioeconomy needs to be further communicated to the general public and stakeholders alike. The link of the circular bioeconomy as enabler of decarbonisation needs to be intensified, so that policy-makers and the general public can better understand its contribution to the climate goals.

Second, in most regional and national authorities there is a lack of an integrated approach while handling multi-sectoral challenges such as the bioeconomy. An integrated vision at the policy level is crucial to facilitate an effective bioeconomisation¹⁰ of the regions. Since it is already known, that clusters and business support organisations in its regional diversity can play an important role as mediators for this cooperation, the composition of the GoDanuBio partnership (over 70% of partners with this profile) was aligned with this approach.

¹⁰ This term was firstly coined during the Danube Transnational Programme project DanuBioValNet (2017-2019). It refers to specific actions at the regional and national level in order to complete the value chain with actors of different nature and coming from different sectors.

Third, up to now there are not many regional policies regarding mitigation of the depopulation and exodus of rural areas, besides specific action plans in Bulgaria, Hungary and Serbia. In most member states the deployment of Rural Development Plans (RDP), as part of the Pillar 2 of the Common Agriculture Policy (2021-27) could partly cover this gap and for the years to come, turn definitively greener: at least 30% of funding for each RDP must be dedicated to measures relevant to the environment and climate change. Member states have the possibility to include in their RDP the priority “promoting social inclusion, poverty reduction and economic development in rural areas” (one of the six belonging to the European Agricultural Fund for Rural Development - EARDF), that should contribute to a mid-term reduction of the migration flow from rural to urban areas within the same country, or from country to another country.

Moreover, the political momentum in which GoDanuBio was implemented (first phase of the European Green Deal) had beneficial results, as it raised awareness and unveiled potential **opportunities**. The project showed good practices that can be replicated from region to region or at a higher level; it also identified which actors of the bioeconomy-related value chain should be considered, so to tackle issues such as youth migration and generational renewal. During the course of the project, the European Commission published its communication “A long-term vision for the EU’s rural areas up to 2040”¹¹, that it is a suitable backdrop for actions and initiatives that are complementary and synergetic with the work undertaken by the GoDanuBio partnership.

The progress of contemporary projects such as **BioeastUp**, **BE-Rural**, **SHERPA**, **POWER4BIO** (Horizon 2020) and **RUMORE** (Interreg Europe) was monitored and personal contacts were established with three of them. Past Interreg Danube Transnational Programme (DTP) projects e.g. **Attractive Danube** and **YOUMIG** were reviewed, but their methodology and statistical results could not be embedded in the preparation of some of the deliverables, mainly due to the multi-sectoral scope of GoDanuBio. Some of the reviewed projects concluded that the dialogue among policy makers and other stakeholders has to be strengthened and there should be more attention given to the relation between demographic change and bioeconomy.

As an example, **YOUMIG** concluded that “labour market integration, education and healthcare are the three most important areas for targeted action. Given the limited legal competencies of municipalities, in most cases cooperation with higher (regional, national) levels of governance is necessary”¹². Though **YOUMIG** deals mainly with integrating immigrants in cities, some of its recommendations could be echoed by GoDanuBio. In this sense, the deployment of the circular bioeconomy to counteract rural migration to cities has to do with new business models and diversification of business for the middle-aged farmers and young agricultural entrepreneurs, as well as higher education of youth willing to make their living in rural areas. Specific demands e.g. local childcare services, smart mobility, and good connection with urban areas possibilities need to be considered to make rural areas more attractive and improve the living conditions for the local young professionals.

Lastly, past Interreg Danube Transnational Programme projects (e.g. **DanuBioValNet**, **MOVECO**, **FORESDA**, **DanubeS3Cluster** and **Greencycle**) produced several outputs, some cross-sectoral based, others sector based e.g. agro-food or forestry. Senior project managers that were active in

¹¹ https://ec.europa.eu/info/strategy/priorities-2019-2024/new-push-european-democracy/long-term-vision-rural-areas_en#aivisionforruralareastowards2040, last accessed 7/12/2022

¹² <https://keep.eu/projects/18497/Improving-institutional-cap-EN/>, last accessed 7/12/2022

some of these projects could capitalise part of their results through contributing to deliverables and project meetings of GoDanuBio. Local community-led initiatives e.g. Local Action Groups¹³ were scarcely considered in the country reports of some partners, which is somehow unfortunate, due to the co-creation approaches driven by these groups.

2.3. National and regional policy frameworks

The first work package of the project focused on mapping the existing policy frameworks. It was needed to know the situation regarding how ready the GoDanuBio participating countries/regions were to face the transition towards the circular bioeconomy. The readiness level of the ten regions/countries studied (Baden-Württemberg, Bulgaria, Croatia, Czech Republic, Hungary, Romania, Serbia, Slovakia, Slovenia and Upper Austria) was assessed.

A total of 54 strategies and related documents were identified indicating that the topics GoDanuBio was dealing with were of high concern. 37% of these strategies specifically targeted one of the three relevant topics (circular (bio)economy, demographic change, rural development), whereas the majority of the related strategies had a broader scope and only partly addressed one or several topics of GoDanuBio.

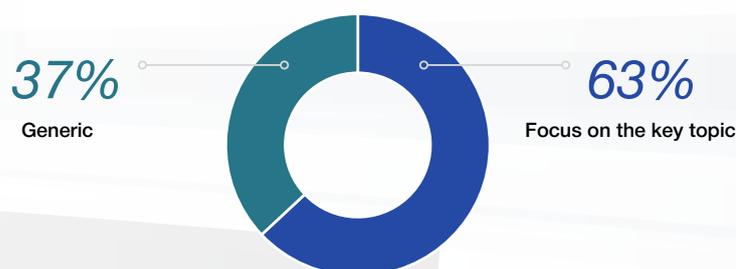


Figure 2: Distribution between specific and generic strategies mapped (as of August 2022)

Table 1 summarises graphically the weight of these policies in the respective national and/or regional frameworks, after surveying the existing strategies and programmes of the GoDanuBio regions on the three appointed topics till August 2022.

Table 1: Strategies existing in the participating countries/regions in August 2022

Region	Strategy		
	Circular (bio) economy	Demographic change	Rural development
Baden-Württemberg	✓		✓
Bulgaria		✓	✓

¹³ https://enrd.ec.europa.eu/leader-clld/lag-database_en, last accessed 7/12/2022

Region	Strategy		
	Circular (bio) economy	Demographic change	Rural development
Croatia			✓
Czech Republic			✓
Hungary		✓	✓
Republic of Serbia		✓	✓
Romania ¹⁴			✓
Slovakia			✓
Slovenia			✓
Upper Austria ¹⁵			✓

Dark Green: Specific strategy in place; **Mid-Green:** Specific strategy in circular bioeconomy in preparation; **Pale Green:** Specific strategy in circular economy in preparation
Yellow: Strategy in place, which is not key topic specific

In the participating regions, Baden-Württemberg has had a specific bioeconomy strategy since 2019 (but rather more important, with areas of action, measures and funding resources in place to implement it); Upper Austria does not have a specific bioeconomy strategy but a national strategy that covers the whole country also since 2019, although the action plan was published in 2022. Croatia and the Czech Republic are currently preparing their bioeconomy strategies. The rest of the assessed regions are mostly handling the bioeconomy within other more generic policies, like the circular economy (Bulgaria, Serbia and Slovenia), innovation (S3), rural development, or climate/energy/environmental programmes. In all cases, there is a lack of synergies between demographic change policies (at the national level) and bioeconomy-related policies (at the national/regional level) currently in place.

Thus, the status of the existing policy frameworks draws a blurred picture to know – in a certain way – if some of these more generic policies will be mainstreamed into concrete roadmaps and action plans on the circular bioeconomy.

From the mapping of the policy frameworks, some **key findings** can be identified:

- **There is a different understanding of circular bioeconomy among the participating regions.** In the cases where there is a dedicated bioeconomy strategy, it is usually well defined. In cases where an overarching strategy is in place, such as often the regional Smart Specialisation Strategies (S3, now S4+), a definition tends to be dispensed with.
- **Circular bioeconomy, demographic change and rural development are of high concern in all participating regions.** The results show that the three topics are addressed in the political agenda of all participating regions. While circular bioeconomy and demographic change are often addressed under the topic of “contributing to solving societal challenges”, the topic of “rural development” is addressed together with aspects of agriculture through the Rural Development Programmes. To date, only Baden-Württemberg combines circular bioeconomy and rural development under the topic “Sustainable bioeconomy in rural areas”.

¹⁴ Romania has specific policies related to bioeconomy in regional Smart Specialisation Strategies, but for this table the eight development regions are considered only at the national level.

¹⁵ Austria has a national bioeconomy strategy, but for the purpose of this deliverable only regional strategies have been considered in countries organised politically in federal states, being the case of Austria and Germany.

- **Different public bodies are owners of related strategy development and implementation.** Due to the cross-sectoral nature of the three topics, different ministries are involved in strategy development and implementation in many participating regions. At the same time, it also shows that the strategy owners tend to implement them independently, although all three strategies have a high thematic overlap.
- **All participating regions have dedicated strategies and programmes in place focusing on at least one of the main topics.** As a result of the Rural Development Programmes (RDP) all participating regions (including Serbia, as an accession country) have a specific programme on rural development. Regarding the other main topics of GoDanuBio, four out of ten regions/countries (Baden-Württemberg, Bulgaria, Hungary and Serbia)¹⁶ have policies on circular bioeconomy (the first one) and demographic change (the other three) respectively. In the case of Hungary there is a specific strategy related to digital agriculture, to add up to the existing RDP. The same happens in the case of Slovenia, which has two extra resolutions related to food and rural development.
- **Smart Specialisation Strategies are the most prominent strategic approach applied¹⁷.** In up to 63% of cases the GoDanuBio topics are addressed in strategies that are more generic. The Smart Specialisation Strategies in particular, which are of decisive importance for the participating regions as the basis for the European Regional Development Funds, often address all three or at least the majority of them.

Applicability and replicability in the Danube Region

Due to quite large differences in the level of implementation of the circular bioeconomy, there is a clear possibility of knowledge transfer from two advanced regions (Baden-Württemberg and Upper Austria) to the other transition countries. The main challenge is to overcome the differences in policy frameworks and infrastructure in each region/country. This aspect was assessed through the project and an exchange of good practices was facilitated. The opinion of representatives of Czech Republic and Serbia during the final meeting of the project shows that some of this work is potentially being embedded in the ongoing policy processes in those countries.

Replicability is possible and can be transferred also in other European regions, especially knowledge transfer for development of governance models. According to the Quality Assurance Manager of GoDanuBio (Igor Kos) this knowledge transfer towards replicability should be based on the recommendations drawn by the regional and transnational policy dialogues of the third work package (more information can be found in the Output Report 3.1 in the project website, section “Library”).

¹⁶ The policies in preparation were not considered in this regard.

¹⁷ Due to the data collection by the end of 2020 and beginning of 2021, most of this accounting refers to the programming period 2014-2020 in regards to the available Smart Specialisation Strategies to then.

The bioeconomisation process is an integral part of a successful deployment of the circular bio-economy, and it focuses on the multi-sector and cross-regional value chains that enable this new economic model. During fall 2021 and the first part of 2022 the GoDanuBio partners identified which regional actors were missing from the value chain in order to mobilise them for the bioeconomic cause. The actors to be identified were divided into four categories:

- Industry (chambers of commerce, clusters, cluster organisations¹⁸, enterprises, professional associations)
- Academia & Research (universities, research institutes, competence centres)
- Public (local administration, regional/national government, regional development and state agencies)
- Society (NGOs, informal civil organisations)

This identification produced qualitative data collected in table 2, in which the main actors to be bioeconomised are listed country by country according to the categories listed above.

Another exercise in this work package was looking for good practices in the following topics in the participating regions: i) Support of policy frameworks facilitating the deployment of the bioeconomy; ii) Awareness-raising; iii) Multi-actor cooperation and partnerships; iv) Interregional cooperation through projects of the Interreg Programme and the EU Research & Innovation Framework Programme. Some of these good practices were presented in a series of webinars in March 2022. The feedback collected in those webinars – to which several external stakeholders contributed – and the compelling work done by CLUSTERO¹⁹ in the output report called “Integration Plan”²⁰ resulted in a set of recommendations that aimed at empowering urban-rural cooperation, strengthening institutional capacities and supporting transnational multi-level governance in the Danube Region:

- **A strategic planning and governance are crucial to deploy the bioeconomy.** The development of a common national/regional vision for the bioeconomy, priority-setting, and coordination among research, industrial, agricultural and regional policies is key to developing regional bioeconomy support frameworks that can be co-funded by regional, national and European funds, as well as other funding sources (e.g. European Investment Bank, European Bank for Reconstruction and Development, United Nations Development Programme, etc.). In some of the countries analysed (Bulgaria, Serbia and Slovenia), policies on circular economy in preparation are definitively an open gate to approaching the circular bioeconomy.

¹⁸ Network of clusters

¹⁹ Romanian Cluster Association

²⁰ <https://www.interreg-danube.eu/approved-projects/godanubio/outputs>, last accessed in 8/12/2022

- **Integrative bioeconomy ecosystems must be developed.** Specific ‘bridging links’ (e.g. thematic platforms, regional networks, specialised innovative clusters, incubators) must support the interaction of stakeholders and ensure knowledge transfer/management and communication, so adding-on to the so-called bioeconomisation. Rural innovation partnerships, linking existing Local Action Groups, Operational Groups (EIP AGRI)²¹ and regional innovation systems, can help to promote innovation in the most traditional subsectors of the bioeconomy (agriculture, fisheries and forestry).
- **Partnerships and transregional cooperation** between regions with the similar bioeconomy approach can facilitate mutual learning. Cooperation projects and partnerships with a bioeconomy focus shall be promoted within existing transregional programmes and in the EU Strategy for the Danube Region (EUSDR).
- **There is a need for capacity-building and support schemes for participation in existing networks and platforms** for countries of the Danube Region with a low bioeconomy maturity. Projects such as GoDanuBio, BE-Rural, SHERPA and ESCAPE (ESPON) have contributed so far to it.
- **Raise public awareness and acceptance of the bioeconomy.** Regions and countries need guidance and support to engage civil society and consumers. Activities are needed to raise awareness of the potential benefits of new/optimised value chains in industrial/agricultural/forestry/fisheries sectors, as well as of the benefits of a circular bioeconomy. Bioeconomy standards and labels should be developed to give an overview on the environmental performance of the bio-based and recycled products.
- To optimise or convert existing value chains at regional and macro-regional level, **all local/regional stakeholders – SMEs, in particular – must be actively engaged and supported**, e.g. through voucher programmes for the use of pilot facilities and demo plants, or open access to demo infrastructure. Not only the primary producers (farmers, farmer associations and agro-cooperatives) must be involved, but also stakeholders upstream and downstream of the core bioeconomy business (machinery, processing, logistics, bioenergy, wastewater treatment, retail and distributors, etc.).

The work done revealed that several types of stakeholders are missing or are still insufficiently involved in regional bioeconomy processes. This varies from region to region and country to country, so does their potential involvement. The actions – related to the recommendations of the Integration Plan listed above – to be undertaken by various partners are suggested in the following table:

²¹ <https://ec.europa.eu/eip/agriculture/en/about/operational-groups> - :-:text=Operational Groups are intended to,the agricultural and forestry sectors., last accessed 08/12/2022

Table 2: Integration actions for missing actors addressed country by country / region by region

Action	Missing actors addressed	Country/Region
Involve the missing actors in bioeconomy processes	Chambers of Commerce	Baden-Württemberg, Czech Republic
	Cluster organisations	Upper Austria
	Competence Centres	Czech Republic, Upper Austria
	State Agencies	Czech Republic
	Local Government	Upper Austria
	Regional Development Agencies	Upper Austria
Mobilise local actors	Chambers of Commerce	Baden-Württemberg
	Cluster Organisations	Bulgaria, Upper Austria
	Professional Associations	Slovenia
	Competence Centres	Bulgaria, Croatia, Romania, Slovenia, Upper Austria
	Local Government	Upper Austria
	Regional Development Agencies	Croatia, Slovenia
	Informal Civil Organisations	Bulgaria, Croatia, Romania, Upper Austria
Involve the missing actors in transregional projects	Chambers of Commerce	Baden-Württemberg, Czech Republic, Romania
	Cluster Organisations	Bulgaria, Hungary, Upper Austria
	Professional Associations	Republic of Serbia
	Competence Centres	Bulgaria, Croatia, Czech Republic, Hungary, Romania, Slovakia, Slovenia, Upper Austria
	State Agencies	Czech Republic, Republic of Serbia, Slovakia
	Local Government	Bulgaria, Slovakia
	Regional Development Agencies	Croatia, Slovakia, Slovenia
	Informal Civil Organisations	Bulgaria, Croatia, Hungary, Romania, Slovenia, Upper Austria
Foster entrepreneurship in bioeconomy	Chambers of Commerce	Czech Republic
	Cluster Organisations	Hungary
	Enterprises	Republic of Serbia
	Competence Centres	Czech Republic, Hungary, Slovakia
Develop educational/ training courses and materials for the bioeconomy	Chambers of Commerce	Romania
	Enterprises	Hungary, Republic of Serbia
	Professional Associations	Republic of Serbia, Slovenia
	Competence Centres	Bulgaria, Croatia, Hungary, Romania, Slovakia
Support SMEs with bioeconomy-related public funding	Cluster Organisations	Bulgaria, Upper Austria
	Chamber of Commerce	Baden-Württemberg
	Professional Associations	Upper Austria
	Competence Centres	Czech Republic, Upper Austria
	State Agencies	Czech Republic, Slovakia
	Regional Development Agencies	Croatia, Slovakia
	Informal Civil Organisations	Bulgaria, Slovakia
Draft bioeconomy strategy & support instruments	Cluster Organisations (networks)	Bulgaria, Upper Austria
	Professional Associations	Republic of Serbia
	State Agencies	Czech Republic, Republic of Serbia, Slovakia
	Regional Development Agencies	Croatia, Slovakia, Slovenia
	Informal Civil Organisations	Bulgaria, Hungary, Romania, Slovakia, Slovenia

Another valuable contribution of this work package was the publication of a Best Practice brochure called “The mobilization of actors for the circular bioeconomy” in May 2022 (footnote 7), in which 26 good practices from the Danube Region are presented under four thematic blocks: i) Multi-actor cooperation in bioeconomy; ii) Strengthening local businesses in bioeconomy; iii) Raising awareness about circular bioeconomy processes; iv) Support instruments for the bioeconomy. The brochure displays initiatives, projects and business models that already exist in the participating regions or beyond and can serve as inspiration for policy-makers and stakeholders across the value chain.

Applicability and replicability in the Danube Region

The Integration Plan gives us an overall prospective with its detailed tables and content on four main categories and should be used especially by regions with a not yet developed governance framework, as the basis for the development of regional/county specific strategies for circular bioeconomy. Findings of these actions are in line with the European Commission’s Knowledge Centre for Bioeconomy report on “Bioeconomy strategy development in EU regions”, published by the Joint Research Centre in 2022.

All actions produced during the making of the Integration Plan can be used to provide other regions of the Danube Region and the EU with a concrete and well detailed script on how to start and structure the whole process. The entire process is easy to overview, actions can build on previous actions and give a best possible start for each follow-up activity – not just for those who are in charge of the process but also for the rest of the stakeholders.

4.1. Status of the participative governance

Participative governance describes the involvement of various interest groups (academia, economy developers, NGOs and civil society) into policy- and decision-making. It aims at harmonising views among all participants based on bottom-up principles instead of top-down policy-making. The active engagement of these participants in the governance processes make it more dynamic, transparent and democratic. This is especially beneficial for local and rural development, since it is a valuable approach to involve primary producers and farmers. The processes are therefore lengthy, and financial and administrative expenditures are needed.

Since the concept of bioeconomy is relatively new²², more participative governance is needed in the future as an instrument for co-designing policies. Particularly in the Danube regions, in which this practice can be seen as a long-term tool to overhaul some inefficiencies inherited from their historical background. Actually, three of the participating regions and countries (Baden-Württemberg, Slovenia and Upper Austria)²³ have a long-standing tradition in participative governance. Croatia and Hungary share some experience too. In some cases, these practices relate more to citizen participation than to multi-stakeholder approaches.

Participative governance is a promising tool for the development of bioeconomy policies, as shown with the participative process in Baden-Württemberg during years 2018/2019²⁴. If citizens and other stakeholders that are not familiar with the bioeconomy are approached from the beginning, they will be engaged for a long period of time and will assure the sustainability of such a strategy.

GoDanuBio partnership dedicated a large period of the project (May 2021 till November 2022) to implementing training on capacity-building, as well as co-creation workshops, with the aim of enhancing the level of participative governance in the participating regions. It was expected that those activities would trigger new policies or support ongoing ones. The approach did not work the same in all countries: some opted for a more systemic approach to the activity (choosing a clear story line between the training activities and the co-creation workshops) while other diversified the scope of the activities, and its thematic focus (chapter 4.3.1). Most of the activities revealed a strong awareness-raising character.

²² The bioeconomy or “bioeconomics” by then was first coined in the 1960’s-1970’s, but it was until the first decade of the 2000’s that it paced slowly in the policy agenda.

²³ Mapping of governance structures: Synthesis report, Deliverable DT1.1.2, ClusterAgentur Baden-Württemberg et al. (2021)

²⁴ <https://www.biooekonomie-bw.de/bw/beteiligungsprozess-nachhaltige-biooekonomie>, last accessed 28/11/2022

Fig. 3 shows the initial situation of participative governance in each of the project countries²⁵:



Figure 3: Map of participative governance in the GoDanuBio regions & countries

4.2. Trainings on capacity-building

GoDanuBio organised 10 capacity-building activities on participative governance from September 2021 till April 2022, which brought around 275 participants²⁶. The topics of the activities are distributed in the following table:

Table 3: Main topics of the trainings on capacity-building

Main topic of the training	Amount
Participative governance without any special topic	4
Bioeconomy	3
Green development and policy support	1
Regional development	1
Support to the Water Councils via participative governance	1

²⁵ Only the regions Baden-Württemberg and Upper Austria were considered in the cases of Germany and Austria.

²⁶ The information on target groups reached is not detailed here since only five countries provided quantitative data in their reports.

4.3. Co-creation workshops

The GoDanuBio partnership organised 32 co-creation workshops from February until November 2022, which were attended by around 500 participants. At least three workshops were organised in each country and the missing actors identified in table 2 were also addressed.

4.3.1 Methodology

A methodology was set for the conception of the workshops. The main goal was to enhance the culture of participative governance within the Danube regions and to contribute so far to the Priority Area 10 (“Institutional capacities and Cooperation”) of the EUSDR. The topics of the workshops should address thematically at least one of the following issues:

- Co-creation activities to diminish the effects of demographic change
- Co-creation activities to strengthen the multi-level governance of the participating countries / regions
- Fostering sustainable rural development with stakeholders
- Fostering urban-rural interactions with stakeholders
- Fostering skills development of regional / local administration in bioeconomy-related topics
- Engagement with local / regional administration towards the bioeconomy transition
- Fostering the bioeconomisation of regions and municipalities

The organisers should adopt at least one of the following approaches:

- Plan the three workshops as sequenced events related to the same topic (e.g. bio-waste management in municipalities and communes)
- Diversify them thematically depending on the regional / local specificities (e.g. first on biological transformation, second on civil awareness of the bioeconomy, and third on involvement of municipalities in the bioeconomy transition)

4.3.2 Outcomes

Through those workshops numerous organisations from the ten project regions became familiarised with the concept of participative governance. In total 490 different organisations (table 4) and around 800 persons were involved in the co-creation workshops.

Table 4: Target groups reached through the co-creation workshops²⁷

Target group/s	B-W ²⁸	BG	CZ	HR	HU	RO	RS	SI	SK	UA ²⁹	No.
Local Public Authority	23	5	6	4	1	3	2	7	40	3	98
Regional Public Authority		3	3	7		2	2	6	5		28
National Public Authority		5	4	3	6	4	2	3	3		30
Sectoral Agency		2	5					3			10
Interest Groups including NGOs	13	15	14	2	3	5	4		24		80
Infrastructure and (public) Service Providers	1	2					2	3			8
Higher Education and Research	27	4	9	4		4	4	2	4		58
Education/Training Centre and School		1		1			1				3
Enterprise, excluding SME		4	1	1	4	1		3			14
SME	21	6	7	5		6	9	12	2		68
Business Support Organisation	27	5	3	6		18	7	4		2	72
General Public		5			1	3		1		11	21
Target Groups reached	116	57	52	33	15	46	33	44	78	16	490

Triple or quadruple helix approaches were mainly used, covering an interdisciplinary cooperation between policy-makers, research and business support organisations, SMEs, interest groups, and – in some workshops – the general public. The bioeconomy was the most ranked topic of the activities (table 5), followed by cooperation and networking. To what degree these activities raised the attractiveness of rural areas to live and work there, or were relevant to triggering policies on circular bioeconomy, needs to be seen. Actually, monitoring on this was not the task of the project.

Table 5: Main topics of the co-creation workshops

Main topic of the workshop	Amount
Bioeconomy	15
Cooperation and networking	11
Sustainable mobility	3
Funding of projects	2
Renewable energy	1

²⁷ The names of countries were abbreviated according to the EU Nomenclature, due to the format of the table.

²⁸ Baden-Württemberg

²⁹ Upper Austria

4.4. Lessons learnt

The participative governance activities strived at drafting an action plan, in which models for participative governance could catalyse the bioeconomy transition, as well as lever interdisciplinary cooperation in the participating regions; the action should range from peri-urban to rural areas, and from national to local administration. GoDanuBio contributed to this mission consistently, taking into consideration the reported numbers in table 6. Around 32% of the groups reached were public authorities, which indicates the relevance of this outreach. Actually local, regional and national public authorities are often the main responsible bodies to initiate participative processes related to policy-making.

Table 6: Public authorities reached via the co-creation workshops compared to overall target value

Target group	Target group description	Target value ³⁰	Target group reached as in table 4
Local public authority	Cities, communities, municipalities, and counties	50	98
Regional public authority	Regional and provincial authorities, regional department	30	28
National public authority	Ministries such as agriculture, climate, digitalisation, economy, energy, environment, forestry, innovation and research	20	30

Some lessons learnt from the co-creation workshops are summarised below:

- The “World Café” method was often used, which showed that it is helpful to implement the exchange of ideas in a dynamic way
- In some regions the participants were not used to this kind of workshop or to the methods used. Therefore, an open round beforehand can be useful as a warm-up, in which everyone can share their opinions
- In general, it brings added value to organise such a workshop in a less formal setting and look for interactive formats
- Special attention should be paid to promotion of the event and the selection of participants to invite. It is crucial to have participants, which are on the one hand interested in the respective topic and who are able to take decisions on the other hand
- It is important to use existing networks to reach as many relevant stakeholders as possible
- Engaging politicians (policy-makers) on an equal footing with citizens often proved to be a challenge; appointing a middleman to mediate ideas and demands is advisable
- Trust is generally a key component to the success of the event. It is often helpful if some of the participants know each other already before the process

³⁰ Overall value set for the whole of the project’s duration (no activity specific)

Applicability and replicability in the Danube Region

Some of the initiatives and project ideas listed in the output report 4.4 (based on the findings of chapter 4) can serve as example of what can be implemented in the field of bioeconomy, rural development and urban-rural cooperation in other European macro-regions. Those regions that share similar economic, ecological, social and political situation, thus similar territorial specificities, will be able to implement initiatives pointed out in that report.

Otherwise, those initiatives in which policy-makers are involved (e.g. national and regional bioeconomy policies) – or need to be involved – are more difficult to be transferred to other regions. Political structures and policy frameworks differ greatly from country to country, and the willingness and interest of politicians to promote the bioeconomy and / or sustainable rural development also varies. Thus, these initiatives need to be properly assessed to determine whether they are transferable to a specific European region.

The Brain Trust was formed to serve as a motivation and information point for the bioeconomy development in the Danube Region. The GoDanuBio project established the so-called Brain Trust as an open network of experts³¹ and interested parties to consolidate mutual efforts and set strategies for collaboration and identification of transformative opportunities in the field of circular bioeconomy. The Brain Trust provided the Danube Region White Paper “Cross-border collaboration in the Danube Region with focus on circular bioeconomy – Wishful thinking or a realistic option?” to kick-off discussions on how the EU Strategy for the Danube Region (EUSDR) can be better aligned with regional strategies with a dedicated focus on the circular bioeconomy. Two transnational dialogues and several regional dialogues were organised by the Brain Trust and the GoDanuBio project partners on strategic actions elaborated in the White Paper.

The GoDanuBio project concluded that the Danube Region’s circular bioeconomy ecosystem has evolved sporadically in localised silos, without clear and coherent direction. There is little or missing coordination among the Danube regions and the necessary infrastructure for developing new, circular bio-based value chains neither sufficiently exists nor is it actively supported. With the Ukraine war, surging temperatures, fires and water shortages at summer times, the signs are clear that the world has become far less predictable. Energy prices are skyrocketing, and inflation is returning. Companies are challenged by these new framework conditions and are seeking a new, sustainable approach to growth. Consequently, the case has never been stronger for more resilient, circular bioeconomy models.

In the Danube Region, Germany (specifically Baden-Württemberg and Bavaria) and Austria remain the only regions with national and regional advanced circular bioeconomy strategies that combine specific policies, funding programmes, and support for cluster initiatives or other networks. Funding programmes in the Danube Region, if existent, are scattered and most often do not encourage cross-regional cooperation. Related policies are fragmented and proper alignment between the regional and national level only exists in Austria and Germany.

While the EUSDR is ambitious in terms of sustainability, circular economy and the circular bioeconomy, previous work within the GoDanuBio project has revealed that there is a serious gap between what is planned on the macro-regional level and what is being delivered on the regional level. This gap has to be closed, because a common macro-regional approach is needed to move the Danube Region towards a green, sustainable and circular economy, which is well embedded into global value chains. To succeed, regional strategies must be better aligned with the EUSDR. This is the only way the Danube Transnational Programme³² can provide added value in this regard.

³¹ The Trust covered expertise on circular bioeconomy, cluster development and innovation in value chains. It was initially composed of Prof. Dr. Ralf Kindervater, Dr. Barna Kovács, Dr. Gerd Meier zu Köcker, Pavla Bruskova, Daniel Cosnita and Mateja Dermastia.

³² Now called Danube Region Programme

Consequently, the Brain Trust defined a set of recommendations focusing on the facilitation of transnational cooperation. As displayed in table 7, the nine recommendations can be clustered around three main areas:

- i) Strengthening the inter-ministerial collaboration;
- ii) Setting-up one transnational collaboration platform;
- iii) Closing the investment gap

Table 7: Set of recommendations to improve transnational cooperation around three main areas

Strengthening the inter-ministerial collaboration	Setting-up one transregional platform	Closing the investment gap
<ul style="list-style-type: none"> ■ Setting-up inter-ministerial working groups ■ Implementing new bioeconomy advisory boards ■ Initiating new dialogue platforms ■ Supporting national or regional bioeconomy clusters 	<ul style="list-style-type: none"> ■ Strengthening the BIOEAST Initiative ■ Ensuring the continuation of the Danube Alliance³³ 	<ul style="list-style-type: none"> ■ A new PA8 Working Group for circular bioeconomy, addressing investment gaps and instruments is proposed ■ Adaptation of funding instruments to SMEs ■ Inclusion of private investors, commercial banks and funding agencies in circular bioeconomy

As far as the implementation of these recommendations is concerned, the Brain Trust can play an important role. The Brain Trust formally met three times in 2021. In 2022 it was primarily represented in online and physical events such as the transnational dialogues, in which its members were actively involved. After the project's end, the Trust is available for:

- Serving as an infrastructural framework for mutual learning on regional policy agendas of circular bioeconomy in the Danube Region
- Providing policy-makers and representatives from various Ministries with advice on how to set-up and execute circular bioeconomy strategies and related support schemes
- Helping to consolidate regional efforts and strengthen institutional capacities to identify transformative opportunities to tackle resilience and sustainability challenges by 2030

For this purpose, the Brain Trust roadmap for 2023 includes four main actions:

- *Action 1:* The establishment of a Secretariat, that could be embedded as a Working Group of the EUSDR PA8 or in a follow-up initiative of the Danube Alliance
- *Action 2:* Agree on the support actions and communication measures via Danube Alliance or EUSDR PA8 (first quarter of 2023)
- *Action 3:* Set-up of the 2023-2024 working plan via a Brain Trust meeting (first quarter of 2023)
- *Action 4:* Implementation of support actions and measures

³³ <https://competitiveness.danube-region.eu/danube-alliance/>, last accessed 8/12/2022



12 training activities



32 co-creation workshops



5 transnational events



25 awareness-raising activities



16 consortium meetings



1 white paper



1 best practice brochure



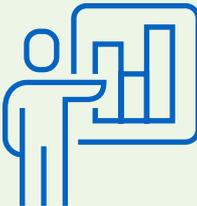
26 best practices



2 policy memos



27 press releases



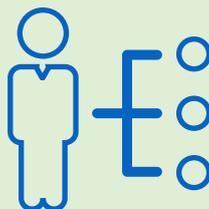
29 deliverables/output reports



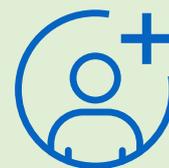
2 videos



9 interviews



>1000 single organisations reached



>200 followers on social media

As Lead Partner, BIOPRO Baden-Württemberg would like to express its gratitude to everyone who has supported the project since July 2020. We had the pleasure of counting upon the expertise and involvement of multiple stakeholders in physical and online events. Support and advice from the Joint Secretariat of the Interreg Danube Transnational Programme (recently renamed “Danube Region Programme”) was always received when needed, in particular from Johannes Gabriel.

Special mention to Dr. Barna Kovács (Secretary General, BIOEAST Initiative), who joined the Brain Trust and contributed with his long-standing knowledge of the bioeconomy in Eastern Europe.

We know at least from three of the Associated strategic partners, namely City of Sigmaringen (DE), Healthy Cities of the Czech Republic (CZ) and the Provincial Secretariat for Regional Development, Interregional Cooperation and Local Self-Government (Vojvodina, RS), that followed closely several phases of the project. It is appreciated.

Yet most importantly, our recognition goes to our eager-to-learn consortium, everyone who worked on the project’s deliverables and activities during the last thirty months. We started and implemented the project during the pandemic, we were struck by a war in-between, and we even reached out to meet & match for the Final Conference (Serbia) one month ago: all in all, a real journey through the Danube.

Stuttgart, in December 2022

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<http://www.interreg-danube.eu/approved-projects/godanubio>

