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The Danube

A river of innovation



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European Commissioner for Research Innovation and Science
Máire Geoghegan-Quinn



European Commissioner for Regional Policy
Johannes Hahn

The EU Strategy for the Danube Region

Research and innovation are key drivers for future prosperity in Europe. Their importance is recognised at all levels throughout the EU, and is reinforced by the prominence of research and innovation in the Europe 2020 strategy, notably through the Innovation Union flagship initiative.

The EU Strategy for the Danube Region (EUSDR) now offers a new approach to focusing efforts on the specific needs and characteristics of the region, for example through Europe's research and innovation policies. It can act as a major building block for the implementation of Europe 2020.

In the Danube region, which hosts the most international river basin in the world, linking 14 countries and 115 million people, the Strategy provides specific opportunities. These include smarter transport links, cheaper and more secure energy through better connections, and co-operation to minimise environmental risks and disasters. The EUSDR encourages innovative solutions in all these areas.

In addition, the strategy contains a specific priority area which addresses the potential of the knowledge society in the region.

This publication shows that the region is already intensifying its considerable research and innovation prospects. It also reveals that much more needs to be done to fully benefit from the European Research Area. Targeted support for research infrastructures and stronger networking between knowledge providers, companies and policy-makers can reduce brain drain and stimulate excellence to make this a truly 21st century region.

The EUSDR will mean existing programmes and policies in the region can be deployed more efficiently and effectively. As the Commissioners responsible respectively for research, innovation and science, and for regional policy, we are committed to working very closely together to build on the progress already achieved.

Success requires the commitment of all actors, particularly at regional level. With your engagement we hope that by 2020 we will be able to report from an even more secure, confident and prosperous Danube region.

Commissioner Máire Geoghegan-Quinn
European Commissioner for Research,
Innovation and Science

Commissioner Johannes Hahn
European Commissioner for Regional Policy



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Frequent acronyms

FP6/7	Sixth/Seventh Framework Programme	EU	European Union
CORDIS	Community Research and Development Information Service	GDP	Gross domestic product
EIB	European Investment Bank	JTI	Joint technology initiative
ESRFI	European Strategic Forum for Research Infrastructure	R&D	Research and development
		RDI	Research, development and innovation
		SMEs	Small and medium-sized enterprises

A strategy for the Danube

Rising in the Black Forest region of Germany, the River Danube meanders south-east for over 2 800 kilometres before flowing into the Black Sea in the Delta region on the Romanian-Ukrainian border. A truly international waterway, it passes ten European countries and through four EU capital cities on its way. And the significance of the Danube lies not only in its geography, but also in its history, where it has acted over thousands of years both as a barrier, to armies and migrations, and as a highway for people, trade, ideas, art and culture.

Today, the continuing waves of EU enlargement are changing the potential of the Danube dramatically. Over its course, its basin now lies largely in the European Union, where it links one-fifth of the EU's surface area and more than 100 million people. Geographers recognise the Danube basin as a 'functional region', meaning a region that has a node – in this case the river – which supports linkages and flows between peoples leading to possible synergies in a variety of areas.

To deliver concrete synergies

It is to build and capitalise on these potential synergies that the European Commission – at the request of the Member States – proposed a European Strategy for the Danube Region in December 2010. The aim of this strategy is to tackle the challenges and priorities of the Danube region in an integrated way, leading to concrete results and a better future for the region and its citizens. The Commission proposal highlights some major challenges:

- **How to improve mobility of goods and people?** Although a major European transport corridor, the Danube is used well below its full capacity. Better multimodality – mean-

ing the interconnection of different modes of transport such as rail and water-borne – is desirable, as is the extension and modernisation of infrastructure.

- **How to have cleaner and cheaper energy?** The region has fragmented energy markets and relatively high prices – more diverse supply, improved efficiency and the development of more renewable energy sources is crucial.
- **How to preserve the environment?** Untreated sewage and soil run-off pollute the Danube heavily. As a major hydrological basin, a regional approach to conservation, planning and water management is needed.
- **How to reduce natural risks such as floods?** Risk management: flooding, drought and major pollution events are all too frequent. More co-operation and information exchange are required for better prevention and preparedness.
- **How to improve competitiveness and innovation?** With some of the most successful EU regions as well as some of the poorest, the Danube macro-region displays

large disparities in wealth and other social indicators.

- **How to improve security and reduce organised crime?** These are significant challenges, and smuggling and human trafficking are particular problems in some countries.

However, the Danube macro-region also enjoys some significant opportunities. It is Europe's gateway to the East and thus a natural route for trade. It enjoys solid education systems with many universities on its banks, offering a springboard for economic development. The cultural, ethnic and natural diversity of the region promise much for tourism. The region is well placed for renewable energy sources and the transition to a low-carbon economy, whether based on biomass, water, wind, solar thermal or geothermal sources. And the region has rich environmental assets, including flora, fauna and outstanding landscapes, such as the Danube Delta and the Carpathian Mountains.



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Building prosperity in the Danube region

Along with the Communication on the Danube Strategy, the Commission also published an action plan to guide implementation. The plan is designed around four pillars: connecting the Danube region, protecting the environment, building prosperity and strengthening the region's institutional capacities, and co-operation on security. Although all four pillars call for innovative solutions to meet the challenges facing the macro-region, it is the pillar 'Building prosperity in the Danube region' that recommends specific actions aimed at the innovation capacity of the macro-region. This pillar focuses on three priority areas:

- Developing the knowledge society through research, education and information technologies;
- Supporting the competitiveness of the region's enterprises;
- Investing in people and skills to raise the human capital potential of the region.

These priorities fit well with the Europe 2020 strategy and will contribute to smart growth on the Danube by providing the framework conditions for innovation to flourish. Some Danube regions are classified as 'innovation leaders', others as 'catching-up innovators.' However, the action plan points

I am convinced that the Strategy will make a real contribution to building a better future for this part of Europe.

Commissioner Johannes Hahn

out that the less-well-developed regions along the Danube can benefit from an integrated approach by bypassing older ICT technologies and adopting the most modern and cutting-edge technologies immediately. This should provide a great boost for the implementation of a whole raft of new e-services in the macro-region, such as e-health and e-business solutions, and better connections between the innovative clusters along the Danube. And cluster development is also part of the action plan, which calls for the development of innovative industrial clusters and centres of excellence, especially across borders and throughout sectors with strong links to research and education.

Resourcing the region

Apart from the Seventh Research Framework Programme (FP7), there are already sources of EU funding that can be deployed to implement the Danube Strategy. For the 2007-2013 period, the Structural Funds are devoting EUR 13.9 billion for research, innovation and entrepreneurship in the Member States within

the macro-region. A further EUR 3.9 billion is available for information society projects and EUR 13 billion from the ESF for improving human capital. Overall, some EUR 100 billion of EU funding is available to the countries of the Danube macro-region in the current programming period. Furthermore, a significant amount of funding from the upcoming programming period can be aligned to the objectives of the strategy. And the European Investment Bank can be expected to continue to play a growing role: in 2009, it lent EUR 11.8 billion for infrastructure and other projects of direct relevance to the Danube Strategy, often to help finance Structural Fund Operational Programmes. The challenge for the Member States is to make optimal use of this funding by co-operating with each other to achieve the objectives of the Danube Strategy.

The Innovation Union flagship initiative

The Europe 2020 strategy to achieve smart, sustainable and inclusive growth is up and running. It comprises seven flagship initiatives, of which the Innovation Union is one. The purpose of the Innovation Union flagship initiative is to harness Europe's creative potential and use it to turn ideas into jobs, green growth and social progress – the EU regions have a vital role to play in this endeavour.

Europe starts from a position of strength, having regions that count among the most innovative in the world today – but it is clear that standing still is not an option. Europe's battered economies and shrinking workforces mean we need to find new, fresh solutions for future growth and jobs. The Europe 2020 strategy makes clear that these solutions will come through innovation. For some time, EU spending on R&D has lagged behind that of the US and Japan. At the same time, R&D spending by other countries, such as China and Korea, is rapidly catching up with that of the EU. For this reason, the Innovation Union flagship initiative is a crucial investment in our future.

In its Communication on the Innovation Union, the Commission sets out 30 detailed action lines covering a wide range of activities which contribute to all seven flagship initiatives. These include, for example: promoting excellence in skills development and education, enhancing access to finance for innovative companies, increasing the social benefits of innovation, and pooling forces to achieve breakthroughs through European Innovation Partnerships. Taken together, these actions aim to make Europe a world-class science performer, to remove obstacles

Innovation in its broadest sense must be part of our response to today's challenges

President of the European Commission, José Manuel Durão Barroso

to innovation, and to revolutionise the way public and private-sector innovation actors work together.

Unlocking innovation in the regions

Europe's regions are in the front line when it comes to implementing the Europe 2020 strategy and unlocking growth. After all, it is in the regions that grand ideas are turned into practical actions on the ground. This vital role was set out by the Commission in its Communication 'Regional Policy contributing to smart growth in Europe 2020', where the central role of the regions in the Innovation Union is confirmed – because it is the regions that are the primary institutional partners for universities, research and education institutions and those enterprises and SMEs that are at the cutting edge of innovation.

A major recommendation of the Communication – with clear relevance for the Danube Strategy – is the call for 'smart

specialisation strategies' to maximise the impact of regional policies and regional funding. Smart specialisation includes concentrating resources on key priorities in a region rather than spreading investments too thinly. And it involves developing multi-level governance structures for integrated innovation policies – a proposal that could well benefit the Danube macro-region. Smart specialisation is also a bottom-up approach to innovation, whereby a region's centres of innovation work together to understand their strengths, on which they can build and specialise, and the weaknesses which can hamper innovation. It can exploit regional diversities and stimulate co-operation across borders to avoid fragmentation and ensure synergies are sought, identified and built upon.

The Danube: wellsprings of innovation

As the Europe 2020 strategy builds momentum, it will guide the countries and regions in the Danube macro-region to work together in ways that will optimise its innovative potential. Yet innovation is not new to the Danube. All along its course, EU funding has been, and is being deployed to create an effective innovation infrastructure that is often transnational. Many of the ideas in the Innovation Union proposals are present on the Danube. For example, the establishment of specialised industrial clusters that build on strengths, and cross-border co-operation on regional energy sources, such as geothermal springs, that have the potential to power the region as well as supporting economic growth and employment. The following sections present many of these innovative projects involving participants from the Danube regions.



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INNOVATION ON THE DANUBE

'Clusterland' – streaming success in the innovation region of Upper Austria

Majestic mountains, pristine lakes of pure water, cut by the fast-flowing Danube – few would suspect that such a magnificent landscape encompasses the most industrialised region of Austria. Yet it is true. Upper Austria, with its regional capital city of Linz, contributes a quarter of Austria's industrial production and nearly a third of its exports. A healthy mix of industrial sectors – automotive, plastics, mechatronics, furniture and life sciences – has produced an economic powerhouse.

Significantly, it was a strategy-oriented regional government – taking the right decisions at the right time and implementing a proactive, forward-looking innovation policy – that has made Upper Austria such a highly innovative business partner and a leading example of smart specialisation built on regional strengths. And as an experienced partner in many multinational EU projects, the example of the Upper Austrian Region can inspire others in the Danube region to build bridges between less-developed, rural areas and dynamic economic clusters.

First steps

In 1998, long before the catchy name 'Clusterland' was conceived by the regional Innovation Agency, the Upper Austria federal state government had already set out the 'Upper Austria 2000 + Strategic Programme', comprising a bundle of actions to boost regional research activities in both the public and private sectors. Regional funding and federal sources, topped by EU Structural Funds, helped turn this strategic programme into action on the ground: a network of around

20 technology and innovation centres for new start-ups was set-up; competence centres for knowledge transfer were established in close co-operation with industry and 'Upper Austrian Research' – a public research organisation; and 11 cluster initiatives were launched.

Pull to push

Subsequently, the pull effect of the state government's strategy turned into a push for innovation as the opportunities it offered were taken up by the region's traditional industries which were experienced in specialisation as a way of occupying niche markets. This opening up to innovation was strongly supported by the state's encouragement of knowledge and technology transfer – and by the foundation of the 'Technologie und Marketinggesellschaft (TMG)'. This technology and marketing company now leads the operational implementation of the regional strategy and serves as a central contact point for all companies considering locating business operations in the region. The decision by the state government to hand over

the operational implementation to TMG, a separate agency, proved a key success factor. TMG co-operates closely with regional universities, industrial sectors and business representatives such as the Chambers of Commerce. Together, they focus on building on existing strengths while systematically expanding the region's activities into new and innovative fields. TMG managers also provide direct help to companies to gain new knowledge in production and processing techniques, raise their innovation performance and to realise cluster synergies by networking with other like-minded entrepreneurs and sources of new knowledge.

Star clusters

In time, as TMG's work became increasingly successful, its clustering tasks were outsourced to a subsidiary with the snappy name of 'Clusterland'. Reshaping the original 11 cluster initiatives, Clusterland constructed six robust, long-term cluster networks, each of which comprises all the larger companies in a sector as well as their suppliers, researchers and specific innovation



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providers. These clusters are: Automotive Cluster AC, Drive Technology Cluster CDT, Plastics Cluster KC, Wood Cluster MHC, Health Cluster GC, and Mechatronic Cluster MC. And among each cluster's members the Clusterland managers successfully promoted teamwork as the key success factor for improving overall competitiveness. Step by step the managers boosted the R&D capacity of the cluster enterprises, thus raising their productivity, competitiveness and export orientation. Good innovation governance, complemented by an excellent logistic infrastructure and a state administration alert to

companies' needs produced tangible successes for 'Clusterland' – shown, for example, by a rise in patents and patent applications.

Spreading the word

Initially, Clusterland's activities were publicly financed – to get the ball rolling. Over time, and with success under their belt, the Upper Austrian cluster organisations are now seeking sustainability by selling their proven services. They also receive funding through participation in EU projects, such as the 2006-2009 INTERREG project 'Regins'. This project focused on transnational interfaces

in the automotive, logistics and biotechnology sectors. Scientists, companies and regional development agencies from Milan, Stuttgart, and Győr in Hungary developed new concepts for innovative collaboration – led by Upper Austria – which generated patents, for example, for motorcycle stabilisation, and improved cooling systems for blood banks. And Regins' success led to further INTERREG projects: for example, between Upper Austria and Karlsruhe which collaborated successfully in CLOE – the Clusters Linked Over Europe project. Participation in the EU's Competitiveness and Innovation Programme and the Research Framework Programme followed. The latest innovation is the region's new organisation, CATT Innovation Management GmbH, which helps universities and businesses to go international and participate in projects. Today, as a result of these efforts, Upper Austria has become internationally renowned for its cluster policy.

Convincing success

Nothing convinces like success, so in 2005, the Upper Austrian government boosted its initial investments in the innovation strategy to EUR 600 million. Of this, EUR 300 million is earmarked for renewing the innovation system under the programme 'Innovative Upper Austria 2010' which runs from 2005 to 2020. Furthermore, in addition to the six sector-based clusters, there are now six cross-sector networks in the fields of human resources, design and media, logistics and energy efficiency. As their name suggests, they operate across sectors and have led to improvements in skills and

RIO – optimising the networks

Evidently, being successful is not enough for Upper Austria's technology and innovation managers. Only the best seems to be good enough. Building on ten years of experience of successful cluster and network management, in 2006 they highlighted the 'human resources and skills factor' as one of the approaching bottlenecks for more and better innovation. The ERDF-funded project RIO (Regionales Innovationssystem Oberösterreich) identified regional skills enhancement and regional university- business relations as important new targets.

For skills enhancement, new activities focused on optimising the economic impacts of existing innovation networks and tackling the shortage of skilled labour in technical professions. For the cross-sector networks, Technologie und Marketinggesellschaft (TMG) deployed EUR 2.55 million to reinforce them with new knowledge and tools, including those in the field of rural development. At the same time, RIO launched 38 pilot projects for e-learning tools, flexible working-time models and placement platforms, all aimed at encouraging students to take up technical studies. Universities, schools, educational establishments and companies were mobilised to support better skills and to tackle the looming problem of a shortage of technically skilled workers.

On university-business relations, projects targeted stronger science-industry relations and accelerated technology transfer through awareness-raising activities, best practice events and wider outreach activities. And results came quickly: by sharing material-testing facilities between firms and research institutes, new high-performance materials were developed, such as polymer nano-composites that fuse metal and natural fibres.

The early-stage involvement of all actors is characteristic of the RIO programme and one of the reasons for its resounding success, the project managers point out. The RIO project is over, but many of its networks are self-sustaining and continue today.

'Things move faster with teamwork'

An interview with Eva Zsigo, European Manager, Department for Economy, Regional Government Upper Austria

Cordis: Where did the basic idea for the RIO project come from?

Eva Zsigo: For over a decade, Upper Austria has learned to take strategic initiatives in innovation policy. There were three basic ideas behind the RIO project: to keep the cluster culture alive, to cross-network and freshen up network management with sector-crossing initiatives like science-industry relations, and to enhance skills. The Innovative Action line in Article 6 of the ERDF regulation at the time supported us to do this.

Cordis: How was the project implemented?

EZ: The earlier measures had become well known. We successfully transposed the original innovative actions into the new mainstream ERDF programme, currently running from 2007 till 2014. The original initiatives, rebuilt around the new clusters such as human resources, logistics, media and design, were then channelled into concrete co-operation projects with firms. For example, a seminar series on skills enhancement was offered, encompassing themes such as working-time flexibility or personnel management. In addition, an academy for personnel management was started.

Cordis: And what was the benefit for the companies?

EZ: The entrepreneurs warmly welcomed this type of knowledge transfer offered by the cluster managers. It strengthened their international competitiveness. Our region has raised its export rates considerably over the last years. Training staff who then well prepared for international markets was the real added value coming out of this ERDF project.

Cordis: Do you see any particular benefits for the Danube region as well?

EZ: Although the topic is fairly new, our firms see a lot of target markets in the Danube region. Our cluster managers have already started many projects with partners from Eastern Europe. And they are successful; otherwise the firms would not participate in these projects. It is rather the new contacts they get that are of interest at present, not so much workforce exchanges. For the Danube region, the take-up of the network management methods will also be a great advantage. Common research, common coaching – things move faster by teamwork than by travelling alone.

human capital. These new cross-sector networks represent the next-generation innovation policy being implemented as of 2010, which is enhancing science-industry co-operation in new fields such as innovative

materials or life sciences while using cross-cutting measure to ring-fence the success of the existing clusters. The ERDF-funded (European Regional Development Fund) project 'RIO' embodies this new direction,

aiming at 'Cultivating innovation in Upper Austria' – a clear statement that an innovation culture never stands still, but must be renewed continually.



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Connecting the Danube: from the Black Forest to the Delta

Twin City Liner is the pride and joy of Michael Häupl, Vienna's mayor, – a fast, light catamaran, she sails the Danube, connecting Vienna and Bratislava in less than 75 minutes. Where formerly an Iron Curtain divided these two capital cities, nowadays more than 150 000 passengers a year use the quick commuter boat which takes them from city centre to city centre in style – for business, to study or just to stroll around.

For the mayor, the successful Twinnie, as she is affectionately known by her passengers, is more than just a pilot transport project. 'It demonstrates how central Europe and its cities can grow together into new powerhouses,' he says. Already an extension to the line is planned, carrying up to 125 passengers to other destinations such as Budapest or Belgrade. The river Danube is the lifeline of the macro-region – and beyond. The waterway connects Western Europe economic centres – such as Baden-Württemberg and Bavaria which contribute 80 % of the macro-region's GDP – with its Eastern partners; and does so in many different ways. Better transport connections will play a prominent role in the Danube strategy, as they did in earlier planning phases of the Trans-European Transport Networks (TEN-t).

A corridor to empower

The first European west-east transport corridor was already planned for in the late 1980s, just after the fall of the Iron Curtain. Nowadays, it exists as 'Corridor VI' – a high-speed railway connection linking Paris-Stuttgart-Munich-Vienna-Bratislava and Budapest. Known as the Magistrale, its route connecting these capitals is set to be the

development axis for more than 200 million Europeans.

However, another transport axis, the 'Corridor VII-Danube', is still awaiting a planned boost to the river's navigation infrastructure, and connections to rail and road networks, which will allow more modal interoperability. Connections between the wider Danube basin to the central transport artery based on the river are also needed. The Danube Strategy aims to increase cargo capacity on the river by 20 % by 2020. Currently, the river's ageing cargo fleet moves only 10 %-20 % of the volumes transported on the Rhine – so to unlock the macro-region's full potential a new network of multi-modal ports along the river plus complementary rail and road lines is critical.

In the same way that better economic and scientific linkages are appearing with the help of EU support, so the European Commission has launched many projects to create the capacity-building structures and infrastructures needed to ensure convergence, in the wider sense, between eastern and western Europe. Examples of these vital, enabling projects are described below.

Romania – Bulgaria – a new Danube bridge to speed up exchanges

To make long distances shorter is a declared goal of the EU TEN strategy – the Trans-European Transport Network plan. And the construction of a new Danube-spanning bridge connecting Vidin in Bulgaria with Calafat in Romania will serve this goal perfectly. With an EU contribution of EUR 70 million, the new bridge triggered state investments of more than EUR 150 million from Bulgaria and Romania, in recognition of the real benefits of connecting new rail and road networks stretching across the two countries. By the end of 2011, the days of the ferry boat – for a long time the only way of crossing the Danube here – are definitely numbered. The new 1 440-metre-long bridge will carry road, rail and even pedestrian traffic, and as a key link in the priority transport route between Turkey and Germany, it will encourage trade and stimulate new economic investment and employment along the river basin and the surrounding hinterlands in what has been, for too long, a somewhat forgotten region.



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ELMO – plugging mobility, plugging gaps

This message of ‘unevenness’ is well known in the Danube macro-region with its mixture of well- and less-well-developed constituent regions. To counter this weakness, a recent Regions of Knowledge transport project is targeting the starting point of the innovation pipeline with the ‘electromobility’ project ELMO (Electromobility in cities and regions). ELMO unites border areas in western Europe – the Stuttgart Region, the Alsace Region, the Berne Region in Switzerland, and the Vorarlberg Region in Austria – with the Hungarian area of West Pannonia and the city of Győr – active in the automotive sector – and the city of Ljubljana in Slovenia. Under Swiss leadership, stakeholders from the regions’ research institutions, businesses and public services plan to speed up the uptake of innovative electromobility solutions in their cities and regions by a faster deployment of electric vehicles. The first hurdles to be overcome are the lack of knowledge and infrastructure. Other project activities include the identification of new research fields in electromobility, setting-up new business plans, such as car-sharing models, and the testing of electric vehicles to better understand standardisation issues and the alignment of cross-border infrastructure – such as charging points and the use of renewable energies. The project will also create training modules for regional developers wanting rapid implementation of electromobility solutions in their cities and regions, while expert round-table events with electromobility leaders from the US, Asia and Canada will ensure no wheels are reinvented. The Hungarian and the Slovenian partners are set to profit from the knowledge coming from the Western participants. And importantly, they are involved from the start, which will ensure that the technology benefits are shared more evenly among the partners.

ERDF – Smart transport solutions in Slovakia

When the regional development managers in the Slovak region Stredné Slovensko were looking for intelligent ways to invest ERDF funding they decided to play to the region’s strengths. Since the 1950s, the regional University of Zilina has specialised in transport and communications research and co-operates closely with regional businesses and public organisations in the sector. So, with EUR 1.19 million from the ERDF, four new research facilities and 16 laboratories were set up – which quickly began work in the fields of traffic management and monitoring, embedded systems, payment services, speech synthesis and safety systems – all part of a two-year project on intelligent transport systems. ‘Our initial focus is to create a national Centre of Excellence for Intelligent Transport Systems and Services,’ explains Professor Karol Matiasko, Dean of the Faculty for Informatics and Management Science at the University of Zilina. And the first fruits of this project are already deployed. Researchers created a smart passenger information system through the simplification of complicated data processing – which is in daily use by Slovak Railways.

Cerada – cars across borders

Nearly every country in the Danube region has one or several centres for automotive manufacturing. The most visible are the big manufacturers: BMW and Audi in Bavaria, Mercedes and Porsche in Baden Württemberg, and Skoda in the Czech Republic. But there are more. Many world-class niche producers have their hubs and homes in the Danube region, such as Steyr Motors and automotive clusters in Vienna and Linz in Austria, and the high-tech component production sites in Slovakia where Peugeot and Hyundai have assembly plants. In fact, almost 16% of automotive industrial output and 10% of added value is produced in Central Europe.

Strengthening these industrial cores by improving their research and innovation capacities is a key activity. To support this, in 2009, 13 partners from the Czech Republic, Slovakia and Poland launched the Cerada project – Central European Research and Development Area. This capacity-building project is supported by the ‘Regions of Knowledge’ initiative within the Seventh Framework Research Programme. Cerada brings together technology-oriented research centres, technical universities and regional development agencies from these countries for networking and enhanced knowledge transfer. Its activities have one major objective: improving the competitiveness of local suppliers to the automotive, aerospace and materials sectors to enhance their attractiveness to global partners. Thirty firms supplying the automotive sector were gathered into an emerging cluster in the cross-border area covering the Ostrava and Zlin regions in the Czech Republic, the Upper Silesia and Katowice regions in Poland, and the Slovak Zilina region. As well as helping upgrade the research capacities in the cluster, there is also a Joint Action Plan – required in Regions of Knowledge projects – to deploy Structural Funds in support of the cross-border nature of the project – highlighting the European added value of the exercise.

Over the long term, the project participants expect to see real improvements in the level of excellence and the variety of product lines related to transport and the aerospace industry. However, there is a long way to go, according to the Czech project leader from the Ostrava regional development agency: ‘High value-added activities, such as the design of new automobiles, mostly remain in the home countries of the car producers’.



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THE DANUBE AND THE ENVIRONMENT

Blue Danube, green issues: maintaining a living ecosystem

The idyllic image of the 'Blue Danube' is known to many of us – but unfortunately it does not correspond to reality today, as the devastating floods of recent years, the dramatically declining fish populations, and the pollution caused by farming and waste water, show all too brutally.

Highlighting this new reality, the President of the European Commission, José Manuel Barroso underlined the need for an environmental pillar – the so-called second axis in the Danube Strategy – during the official presentation of the Danube Action Plan in 2011. Concrete actions, like restoring water quality, managing environmental risks such as flooding, and preserving biodiversity are integral aspects of the Strategy.

The facts speak for themselves. Around 41 % of aquifers in the Danube basin are

already contaminated with fertilisers and other pollutants. And given the accelerated agricultural and industrial development of the macro-region, these figures are expected to rise. As the Commission President confirmed, 'Tackling these environmental problems in the Danube area is not a luxury.' Environmental organisations like the WWF go even further: 'The Danube must not become a mere transport canal, but remain a living river.' A first wave of projects for revitalisation and restoration are already under way using eco-technologies and

water-sewage management. A main objective of these efforts is, by 2020, to return the water quality of the Black Sea to the low pollution levels last seen in 1960.

Examples of the many RDI projects along the Danube region that are working towards this end are given below. These projects are inspired by the belief that a three-pronged effort is needed, addressing the three Ws: water, waste and wood.

WETLANET – success in wetland ecosystems in Bulgaria

The Lower Danube Basin and the Black Sea coastal area form a very special river environment where flooding is frequent and pollution can endanger the very specific habitats of flora and fauna in lakes, rivers and coastal zones. Careful management of the wetland ecosystem in this Bulgarian region was therefore given a high priority as part of the 'Research Potential Project, Regpot 2008' implemented by the Central Laboratory of General Ecology at the Bulgarian Academy of Sciences (CLGE). A first development involved helping CLGE headquarters in Sofia and three remote field stations located in river wetlands of major ecological importance – such as a marine station and a river lake station – to improve their communications and upgrade their technological capacity with new IT systems and software, including image-processing equipment. Furthermore, the capabilities of the whole laboratory network were raised by employing more experienced researchers and through training events and study visits to leading centres abroad. Advanced techniques were discussed in a series of workshops, for example on 'Molecular and biochemical markers in wetland eco-toxicology' and 'GIS in wetland conservation and management'.

Building enthusiasm

Furthermore, the profile of the CLGE was raised by participation and integration in ERA (European Research Area) activities – such as collaborating on EU R&D projects – as well as by the participation of many staff members in international conferences and workshops, all of which boosted contacts

with the international RDI community. At the start of Regpot, the Bulgarian laboratories lacked the specific tools needed for studying wetland ecologies – data processing, the latest modelling techniques and molecular approaches. The situation has improved to such an extent that postings to the remote wetland monitoring stations are now much sought after by young staff scientists and technicians who can make real contributions to their management and preservation. In addition to the technical advances, a significant effort was made to attract and inform the general public about the importance of

the wetlands on their doorstep. Books and leaflets, open days and a multimedia exhibition on 'Wetlands: life, environment and resource' attracted much interest from the general public – especially schools and universities – and have helped sensitise people to the specific situation in the Danube Delta. Yet there is still more to achieve – the wetlands researchers' declared goal is to become a centre of excellence for wetland ecosystems in the whole Balkans.



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Top-down and bottom-up: a wave of water protection projects

While they are many, and may have impressive names, many projects on the Danube have one main aim – to protect – to protect river water quality and to protect the river basin from damaging floods. Take WANDA, for example – a transnationally coordinated project for the management of ship-borne waste and risk reduction for Danube

river transport. Or there is DRA-MUR-CI, a joint Austrian-Slovakian project to mitigate flooding in the tributaries of the Danube. And the INTERREG project EU-Water that concentrates on rural areas in eight south-eastern EU countries to ensure the proper handling of nitrates and pesticides in agriculture. And last but not least, the gigantic

ERDF INTERREG project FLAPP which combines the efforts of 15 countries from all over Europe to improve 'Flood awareness and prevention policies' in border areas.

FLAPP – mutual learning about flood management

Led by the Dutch Maas-Rijn region, project participants are looking at best practices in flood prevention from all angles – starting with structural and spatial measures, passing through tide observatories, flood guidelines, cross-border management and alert chains, and ending in the state-of-the-art models of 'mobile dams' in Maastricht. 'It was interesting to see the Dutch "Room for the river" project in the field. I learnt that flood prevention and nature development can be compatible as long as there is enough room,' explained Josu Elso, project manager from Navarra in Spain who is hoping to transfer the lessons learnt to his own region. The EUR 1.1 million EU contribution to FLAPP over three years seems money well spent.

Modern waste treatment – key to a clean environment in the Danube

In Bulgaria, EU funding of over EUR 11 million is connecting more than 100 000 people to modern waste-water-treatment systems that will help clean up the Danube river system and its tributaries. The project to treat domestic and industrial waste water covers three mid-sized cities and towns in the south east and the Sofia region. 'The benefits for the population in the region include reduced risk of pollution of the soil, ground water and rivers, thus enhancing health. But the improved infrastructures also enable increased economic activity as well as

better conditions for developing tourism and agriculture,' explains Jordan Mihtiev, Mayor of the Gorna Oryahvitsa municipality. Financed by a mix of Pre-accession and Cohesion funds, the project is one of 36 waste-treatment projects running in Bulgaria which aim to bring the country's waste-water-management standards up to EU levels.

Dumping the dumps

Meanwhile, in Hungary, over 80 obsolete landfills are being closed under the

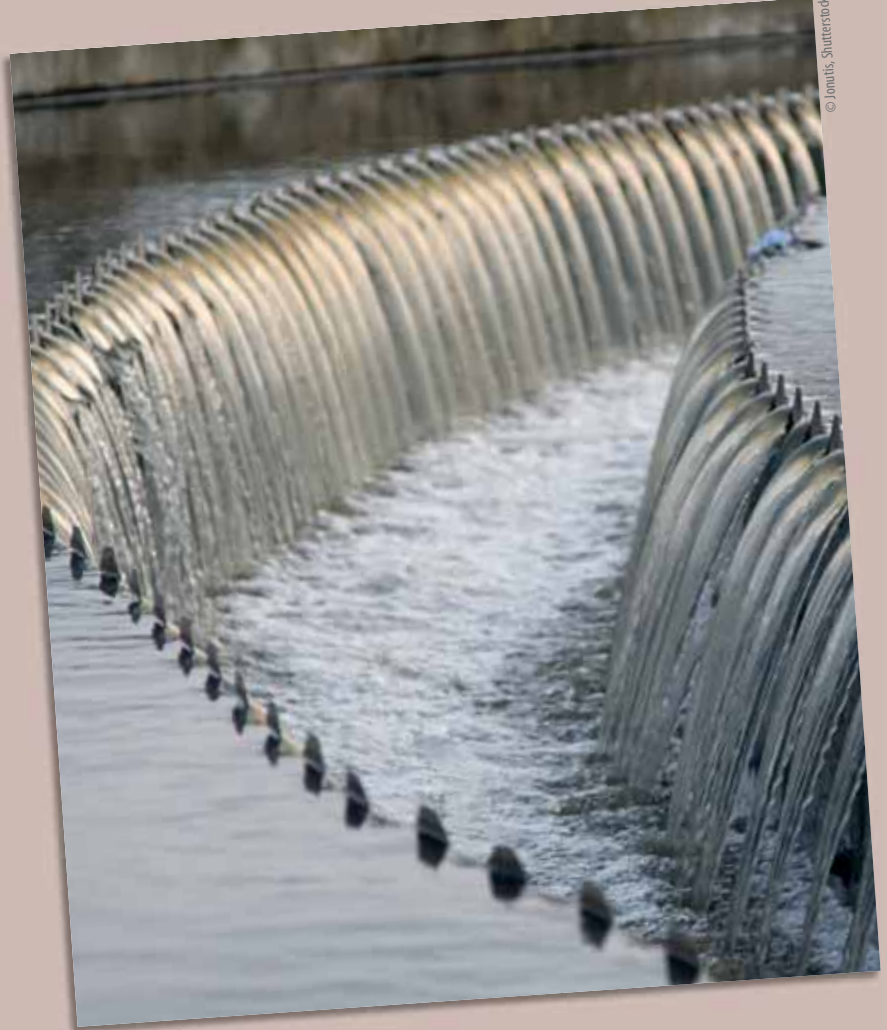
Cohesion Fund Operational Programme 'Environment and Energy' for the 2007-2013 period. Illegal dumps and landfills operating without adequate insulation pose considerable risks for soil and air contamination as well as for drinking water quality. Project measures will benefit 434 676 permanent inhabitants living in the area, 300 000 tourists annually, and 70 000 inhabitants living in adjacent areas served by the aquifers. These activities cover the regions of Mid-Transdanubia, South Transdanubia, South Great Plain and Central Hungary, the



so-called Mid Danube area – where more than 1.3 million square metres have been reclaimed by the re-cultivation of abandoned dumping sites. Restoring and protecting the natural flora and fauna as well as integrating re-cultivated territories into the landscape are of major concern. The EUR 31-million investment is also accelerating the economic development of the region – the South Great Plain alone boasts 329 research centres – for example, the recent decision by Daimler Benz to bring car manufacturing to the region. Much of this development is supported by the new Alföld industrial development company which is implementing a complex regional development programme covering infrastructure, logistics and human capital development.

Clean and clear again

And in Slovakia, people are finding that respecting river environments pays off. ‘The fish are back’, is how Vladimir Bozik, Head of the Eurofunds Department in the Bratislava Water Company describes the clear benefits seen from reconstructing and extending the waste-water-treatment system in the Slovakian town of Myjava in the foothills of the White Carpathian mountains. Around the town are old industrial sites where car components, machinery and plastics are manufactured close to the town’s rivers, and have contributed to water pollution. However, since the project was completed – involving the construction of new infrastructure and using new technologies – clean and clear water is flowing again in the Myjava river. A further, very welcome benefit is the new and ecologically valuable riverside vegetation planted to take up fertilisers from the surrounding fields. ‘The Myjava river is one of the many natural attractions in the region’, explains Bozik, ‘the vegetation has a pivotal role to play in eco-stabilisation and protecting the river. With these measures the efficiency of water purification was raised



very quickly,’ he reports with much satisfaction. And the region is building on this first success: deploying EUR 1.9 million of ERDF funding, three neighbouring towns can now easily be connected to the collection and treatment systems and 13 new jobs have been created by the eco-stabilisation activities, with more to follow.

ROSA – reinforcing sustainable carp aquaculture in Serbia

The ROSA project looks at the trade-offs needed to reconcile ecological and economic concerns in aquaculture. It aims to revive a traditional carp-breeding culture in Serbia and the Western Balkans. Expertise from Norway and Hungary is being brought in to help with new technologies, such as for water and feed control as well as helping train local scientists. The strategic aim is to rebuild a stable and sustainable aquaculture industry in Serbia, reducing reliance on imports. And better carp production can boost nutrition in regions suffering from a lack of fresh fish on regional markets – as in the Western Balkan countries – so the benefits are more than economic and environmental. Currently, Serbian fish farmers produce 10 000 tonnes of carp annually, but a range of factors and inefficiencies mean the full potential of this resource remains untapped. In addition, undigested cereal-feed residues contribute to heavy pollution. To solve these problems, the Faculty of Agriculture at the University of Belgrade contacted researchers in Norway who have much expertise in feeding issues, and those from Hungary, well-known for their excellent breed-selection methods for carp. New feeding methods – based on natural foodstuffs from the rivers – are now undergoing experimental testing in Belgrade, as are new breeding methods and stress monitoring. This transfer of know-how from countries experienced in aquaculture – achieved by the secondment of foreign experts and exchange visits for young Serbian scientists – is the key to success and is expected to result in the right balance between more eco-friendly and sustainable aquaculture practices as well as higher yields.

The beauty of wood

As one of mankind's oldest building materials, wood and wood products are proving increasingly trendy these days as people come to appreciate the benefits of a good-looking, fast-growing, ubiquitous, climate-friendly and easily recyclable raw material. As a result, there is a global trend towards using wood-based materials and wood fuel

in many industrial production chains. New IT management technologies and the latest methods of forestry management are multiplying the modern applications of raw timber – for example, in construction, paper production and energy consumption. However, increasingly, warnings are being voiced against the misuse of forests: against

regarding them as mere sources of raw materials and against over-exploiting ancient ecosystems in the rush to implement greenhouse-gas reduction targets in ways that may have doubtful results. Two EU-funded projects in the Danube region demonstrate how such misuse can be avoided.

Tanno meets Gemini

The operative title of the project 'Tanno meets Gemini' mysteriously links the German word for a fir tree with the astrological sign known for its versatility. But, in the project subtitle 'environmentally friendly construction using local wood and saving energy', the meaning becomes clear. The Austrian Steiermark Region – using the umbrella of a new ERDF project – brought together two existing projects to develop versatile solutions based on locally sourced fir wood. The first partner, the architectural consultancy 'Tanno', showed how to build affordable houses using local fir wood. The second partner, 'Gemini' – a construction firm – then used this technology to pilot a 'passive house', which generates all the energy it needs using solar panels on the roof and innovative, energy-saving insulation techniques for the walls. The objective was to demonstrate that two principles can be combined: the cost-efficiency of wooden houses and the energy efficiency of passive-saving methods. And as part of the project, an innovative air-conditioning system was tested using underground pipes for cooling air in the summer and heating it in the winter. The total cost of the project was EUR 363 000, including an EU contribution of EUR 121 000, which allowed the pilot house to be built and marketed extensively. The impact was immediate – without further EU support the company has built seven similar houses as show homes, and quickly found buyers. In the forest-rich Danube region, where building with wood has a long history, the Tanno meets Gemini project is showing the way to widely applicable building solutions that help meet environmental needs while using regional materials..



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IN2WOOD – the forest saviours

In 2010, project partners from six countries – strong in forestry and forest research – joined forces for a pivotal renewable-resources project under the FP7-funded Regions of Knowledge initiative. The IN2WOOD project is scrutinising the new global demand for wood as a raw material by investigating the possible negative effects on natural resource systems. And, in parallel, the partners are researching the dynamic adaptations the forest sector needs to make in response to this growing demand, which constitutes a major driver for economic growth and employment in many European regions.

Forests are a major part of our natural and cultural landscapes. Approximately one-third of the European continent – excluding the Russian Federation – is covered by woods, both natural forest and plantations. 'As an ecosystem, forests are a key element in the natural cycles of soil, water and the atmosphere, and they offer habitats for flora and fauna, thus contributing decisively to the preservation of natural biological diversity' – is how the project partners from Germany, Austria, Switzerland, Italy, Slovakia and Ukraine introduce their work. They go on to point out that, as part of an overall forest industry which, in Europe, has long been an intrinsic part of our historically developed cultural landscapes, timber resources are coming under increasing pressure. 'Worldwide, a dwindling forest resource base has to supply the demands of a growing population,' warns Uwe Kies, member of the project leading team, the German 'Internationales Institut Für Wald und Holz' in Münster, North Rhine Westphalia. Significantly, while European forest stocks are showing a long-term increase, worldwide forest depletion continues as around 9.4 million hectares a year are felled. A rapidly increasing demand for wood products in the EU, especially in Eastern Europe, combined with the growing role of wood as an energy carrier, are responsible for rising competition and regional shortages on markets for raw timber. In addition, global climate change can decisively alter a forest's structure and put extreme pressure on regions dependent on silviculture – as tremendous storm damage have already shown in less-developed regions such as the Carpathian mountains in Ukraine and Slovakia.

New ideas for new forests

'Current efforts to increase wood production are not likely to balance the emerging gap between supply and demand,' writes the author of the IN2WOOD project proposal – giving force to the rationale for a EU research project to work on options for enhancing wood production and to define future fields of research tackling issues that cover:

- Modern forest management
- More productive silvicultures
- New technologies for innovative plantation forestry, such as short rotation coppicing
- Natural resources preservation.

The project targets agriculturally marginal sites, rehabilitated ground and industrial waste lands as potential new territories for multiple types of new woodland, for example, the energy forest, the agro-forest and the raw material forest, which can offer new paths for diversification. Another interesting concept concerns 'NWFPs' – the non-wood forest products, like game, wild fruits, medicinal plants and services such as nature conservation, outdoor education, recreation and tourism. These create a particular source of income in rural communities and are given special attention. The need for focused regional strategies for wood-fuel development (biomass action plans) is highlighted by the project, as is the need for better knowledge transfer from West to East in the areas of harvesting technologies, wood logistics and forestry-worker training and qualifications. At the same time, the conservation of forest soils, ground water and drainage protection, the preservation of fauna and flora, and the threat to forest health from parasites and climate pressures are all priorities for further research and play a prominent role in the Joint Action Plan being developed in the project.



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Energy connections to power development

Trucks and trains, utilities and universities, hospitals and houses – they all need to be powered and heated. Energy is a vital ‘lubricant’ for developing the macro-region and its markets. And as for the EU as a whole, so for the Danube – well-functioning networks, interconnections and interoperability are needed for energy security, diversification and effective energy operation.

However, there are some features specific to the Danube region. Energy prices are high and the markets and energy grids are highly fragmented, or in some cases failing. In addition, the macro-region is particularly vulnerable regarding the security of energy supply, as demonstrated in January 2009 when gas supplies were cut. Investment in infrastructure is thus a key priority, as well as integrating the Danube region into the Trans-European Energy Networks (TEN-E) and the European Energy Programme for Recovery (3rd energy package).

Development pipelines

In this context, the proposed East-West natural gas pipeline, Nabucco, running from the Caspian Sea via Turkey to Austria, or the

proposed South Stream Pipeline, connecting Constanța in Romania with the Italian port of Trieste, both offer potential cornerstones for better security of supply in the region. Bringing Central Europe new supplies of natural gas from the Russian Caucasus, the Middle East and Central Asia, these pipelines would form a future southern gas corridor. A total of EUR 510 million is dedicated to gas network projects in the Danube region, and Nabucco is the largest of these, receiving EUR 200 million in EU support. Other large-scale projects are North-South gas interconnection projects running from the Baltic Sea to the Adriatic Sea – crossing several Member States in the Danube region. A more robust supply infrastructure is also the goal of new liquefied natural-gas-storage

terminals in Croatia, Romania and Bulgaria. Other promising projects include electricity transmission and interconnection systems linking Slovenia, Hungary and Croatia, as well as the modernisation of oil pipeline connections. And there are additional possibilities on the horizon: the whole renewable energy sector will play an increasing role in the future energy policy of European countries. Wealthy in biomass, wind, solar and geothermal power, as well as in traditional hydroelectric dams used for many years in mountain regions – all these possibilities to power the Danube macro-region and beyond are receiving much attention from EU policy-makers and project proposers, as the following examples show.



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Clustherm – uniting geothermal regions

Thermal springs – where hot, geothermal water rises to the earth's surface – can serve many purposes: heating buildings and greenhouses, electricity generation and, of course, as sites for thermal water balneology – better known as spas and thermal cure baths, famous for their restorative and health-giving properties. Creating a central European thermal-water research cluster was the aim of the Clustherm project, started in 2008 as part of the FP7-funded Regions of Knowledge initiative. Six regions, from Hungary, Romania, Croatia and Austria, each part of the geographical area known as the 'Pannonian Basin', came together to better exploit the potential of their geothermal reservoirs – long used for a variety of purposes from horticulture to health tourism. In detail, the partners shared knowledge and upgraded their research capacities while exploring new applications, such as for powering production processes and heating buildings. Wells and springs which have water temperatures between 50°C and 110°C are seen as a major energy source for the future in the region. In building future scenarios for the rural economies where these thermal sources are located, the project partners involved a wide range of stakeholders, including local authorities and researchers in fields such as geology, power engineering, medical care and thermal-water-based health tourism managers. This was done to raise awareness and build strategic partnerships as well as for exchanging best practices and creating some joint infrastructures.

A database to build on

Project coordinator Márta Völgyiné Nadabán, from the Innova innovation agency in the Hungarian Észak-Alföld Region, explains the Clustherm rationale. 'During our work we realised that it is not easy to compare the partner regions due to different approaches to collecting hydrogeological well data. However, once we agreed on common indicators we could finally develop an international, harmonised database containing detailed information about all aspects of thermal wells and their hydrogeology.' This database – a direct result of the project – is a valuable tool for future research. Furthermore, a geothermal atlas of the Pannonian Basin will be another direct output of this database – mapping the hot spots of geothermal wells, hydrocarbon wells and water-supply wells. It will also serve as a compass and fund of geological knowledge for developing a wide range of new business opportunities from renewable energy supplies to new forms of balneotherapy. The project also recommends the creation of professional advisory services for rural communities which want to better exploit their thermal energy resources. The development potential of the region was on show at a photographic exhibition put together by the project. Called 'The spas of old times', the gallery tracked how the old 'cure houses' have developed over time into new consumer-oriented spas like the modern Thermenland in Styria in Austria which attracts both health tourists as well as old and young fun-seekers – a real role model for creating new health tourism offerings.

Hungary and Romania: showcasing alternative energies

Teaching and awareness-raising about the use of renewable energies lies at the centre of the activities undertaken in the cross-border region that covers Del-Alföld in Hungary and North-west Romania. With ERDF funding, micro-regional information and demonstration centres were established in several towns of the region. Their goal was to transfer knowledge about practical applications of wind, solar, thermal and bio-energy over to local stakeholders. A Renewable Energy

Information Centre, set up for demonstrating new energy solutions and the replacement of gas heating by alternative heating fuels at a spa and incubator house, provided real-life examples for people to see. At another centre, local government, industry and agriculture showcased their concrete efforts to use alternative energies. 'The examples of environmental protection will lead to a better quality of life,' explains project manager Laszlo Kicsiny, summarising

the many activities on display, ranging from the replacement of gas heating by thermal energy through to the installation of solar collectors. Significantly, the Hungarian and Romanian regions involved are both relatively innovative in terms of their research centres and businesses, so the project partners are hoping that local populations accustomed to risk and innovation might also lead in taking up alternative technologies.



RenergEuReg – new energy challenges for new landscapes

Renewable energy policy as a cornerstone of the local economic development strategy was the starting point of a bilateral project between a German and a Romanian region. The partners could not have been more different: the Brandenburg Region is one of the largest energy producers in Eastern Germany and the energy industry is a pillar for economic development. For many years, Brandenburg companies have been enjoying growing success in the promising sector of new energy technologies. In contrast, the Romanian Centru Region is only slowly accepting renewable energies, despite the region's high potential. This is partly because, in the 1970s, the Centru Region was one of the strongest promoters of renewable energies, installing large solar-thermal systems in some cities. However, the less-than-perfect systems in those days led to disappointments and their popularity, as well as that of renewables in general, dropped sharply. But the potential remains. The Centru Region houses more than 30% of Romania's small-hydro potential, and this type of alternative energy is well accepted among Romanians. By participating in the project, the region expects to capitalise on this potential source of strength.

Cluster-shaping activities

In the bilateral RenergEuReg project, a network of energy researchers and marketing and system development experts was established and competence centres for knowledge exchange were set up. Additional cluster-shaping activities involved renewable energy experts from Transylvania University as well as Brandenburg energy experts – from biogas and soil ecology companies and from research institutes located around the city of Cottbus in Brandenburg. The overarching objective was to integrate all aspects of energy – the way it is produced, distributed and consumed – into local action plans for economic development, environmental protection and waste treatment. On top of this, an energy agency was set up in Alba County in Romania, and numerous mentoring activities between the Brandenburg and Centru regions were started, such as website exchanges, brochures, conferences, and seminars. Overall, the co-operation between the partner regions acted as a strong element of support and cohesion with concrete results: the joint development of new materials, new mechanical solutions, hybrid systems of combined solar-wind/solar-hydro energy systems, and the incubation of new SMEs, count among the numerous project outcomes.

Knowbridge – cross-border exchange of renewable energy clusters

Outdated industries in northern Hungary and eastern Slovakia created the setting for the start of a knowledge-driven research project on renewable energies, aiming to raise competitiveness and economic development. Both regions have a history of heavy industries, as the centres for metal and steel production of their respective countries. The project Knowbridge, which started in 2009, is aiming to change the greyness and decay of these declining industries by setting up new links for knowledge exchange and capacity building. The project objectives, when realised, are promising. It will enhance energy-efficient technologies utilisation by SMEs, large companies and households – achieved through energy savings and better use of alternative sources. And, as a consequence, this will also contribute to reductions in CO₂ emissions. Transregional learning and other transnational activities had already been implemented in a forerunner project named Norris, in which, in a unique initiative, a cross-border Regional Innovation Strategy (RIS) was set up. An important priority then was the establishment of cross-border clusters and the shift from traditional economies to knowledge-driven ones. Common sectors, such as electronic technologies, renewable energy sources, energy utilisation and environment management, have been identified since.

Coordinating the cluster

Nowadays, the outcomes of the Norris project form the building blocks for offsetting up interregional energy clusters. The identification of complementary areas for co-operation in energy exploitation and application is ongoing and a key activity in the project. From solar energy to high-grade biomass products, like liquid biofuels and wind-industry products, the range of possibilities is growing. Furthermore, the project is taking on the challenging task of coordinating a wide variety of stakeholders, not only the region's development agencies, research stakeholders, institutes, business entities and local authorities, but also environment institutes and companies from Spain and the UK which are offering expertise to boost the project's performance. Shared knowledge creation, knowledge and technology transfer, and the practical implementation of renewable-energy sector solutions are the concrete outcomes of a project that started under difficult conditions and ended with a huge step forward towards success: a cross-border cluster for joint future actions in renewable energy technologies which is fully integrated into the European knowledge community of renewable energy sources.



Changing lives through socio-economic innovation

Smart, green and inclusive growth is the motto of the EU 2020 strategy, the driving force for jobs and growth in the European Union up to the year 2020. In a series of flagship initiatives – such as the Digital Agenda, Youth Mobility and the Innovation Union – the EU details the strategic goals and points to ways of implementation. Innovation is a keyword in many European economic strategy plans and a new approach – based around the concept of socio-economic innovation – is gaining ground.

It is only recently that the innovation goal in EU policies has been differentiated to highlight the variety of its dimensions – and in the process, shedding light on the multi-step phases of innovation chains or cycles and the measures and resources that are a prerequisite for more and better innovation. This new examination also reaches out to the end points of innovation – which lie in marketable research results and the tangible

successes of better products and processes. However, it does not necessarily stop there. New themes, such as non-technological innovation and social innovation, are under investigation to understand how they might contribute to societal needs in the future, and how they might direct future research. New innovation pathways, such as design, social management and the concepts of public or social goods, are being explored. These

ideas fall under the broad heading of ‘socio-economic innovation’ which encompasses ideas and efforts to highlight new market-based goods with a high social outreach – innovative products and methods that could change the daily lives of many for the better. Examples of socio-economic innovation are provided by two projects from the Danube region, described below.



MedicineLine – a prescription for transparency

In Budapest, a consumer-friendly medical information service is bringing transparency to therapies and patient treatment. Gone is the need to decipher the dire warnings contained in the tiny letters written on flimsy paper leaflets that are packaged in boxes and bottles of medicines. Instead, an automatic speech-based dialogue system – via telephone, web or web-text – gives the user/patient all the relevant medical information she or he needs. This new transparent service has proved a huge relief for concerned patients and busy healthcare professionals in the Budapest medical sector. At the heart of the system is an automated database that registers some 5 000 pharmaceutical products, and new medicines and therapies entering the market are added constantly. Furthermore, this easy access to regularly updated medical information is possible from remote areas and hospital beds. Satisfied users know this innovative service as ‘MedicineLine’.

Walking the innovation talk

The MedicineLine project was carried out by the Department of Telecommunications and Media informatics at the Budapest University of Technology and Economics, together with the Hungarian National Institute of Pharmacy. With EU backing of EUR 125 000, they developed an automatic, 24-hour information system, easily accessi-

ble via the internet, mobile phone and telephone, equipped with speech synthesis and voice-recognition technology. The innovative aspect of the project was combining new technological tools in smart ways: an automatic speech-based dialogue system identifies the name of the requested medicine and provides the information required. Users can simply talk to the system or use touch-tone controls, and the information on the requested medicine is read back by a speech-synthesizer or read on a screen. With the application of specialised grapheme to phoneme rules from the field of linguistics, good and accurate pronunciation of the information is generated. An automatic updater and a web-based administration tool refresh the medical data on MedicineLine twice a month. New drugs are added and outdated drugs and information are deleted, if necessary.

Built on regional strengths

It is no accident that MedicineLine emerged from the Budapest labs. Since 2004, the Regional Innovation Council of Central Hungary and its Regional Innovation Agency, INNOREG, have designed and implemented innovation strategies which build on regional strengths, priority setting and smart specialisation. The region has industrial clusters operating in, among others, medical instrument production, biotechnology, packaging technologies, and multimedia and information technologies. The smart combination of information technologies, speech and voice recognition know-how and the medical and pharmaceutical background of many stakeholders in the region were critical for the success of MedicineLine, which is now a showcase for how socio-economic innovation can be applied for the benefit of many.

E-government in the metropolitan area of Bratislava

Whether in the fields of employment and social affairs, health and safety, urban planning or transport, today's citizens of Bratislava enjoy rapid access to all the data about the city they may need – as tables, graphs and interactive maps. This all is thanks to a newly developed internet network with carefully designed search engines and new linkages between the various public services – a development known as the Geoportal. And it is not only useful for the general public, as its ability to deliver data on urban-settlement patterns and transport-user behaviour makes it a valuable tool for urban planners. 'With the data obtained from the Geoportal on building plans, we have been able to conduct analyses on the region's needs which shape our strategic decision-making. And the data available on commuter behaviour has helped create tariff zones for Bratislava's integrated transport

system,' explains Rudolf Bridzik from the city's Department of Spatial Planning and Geographic Information Systems. The new system provides great advantages to inexperienced first-time users: They do not need to be familiar with the administrative structure to dig down and mine valuable data. With simple mouse clicks, the required geodata information can be simply retrieved from the system and presented in 3D using maps, as well as pictures, charts and documents.

Spreading the word

With the help of EUR 541 699 from the EU, the Geoportal is carrying Bratislava into a new age – the information age of a self-governing region. Until recently, only one in ten municipalities in the region published basic information on their web pages. With the Geoportal, many more stakeholders can participate and their interactions can build

bridges to a lot more municipalities – not only within the greater Bratislava area but also to other Slovak regions, state administration bodies and other agencies and institutions, such as statistical offices, land register authorities and even to the national roads authority. Promoting museums, tourism and cultural events is another welcome facet of the enhanced online communication that joins citizens with government. Geoportal is supporting the move towards an information-rich society with rapid links and information access, and which is already spreading out of its urban cradle and into the surrounding rural areas.



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The Food Cluster initiative: supporting regional food research

The Food Cluster Initiative is an EU-wide network of R&D performers and projects in ambitious food-producing regions which are co-operating to learn from each other's strengths and boost EU food research. The aim is to give European foodstuffs, and the food regions that produce them, a strong competitive advantage on EU and world markets.

The Food Cluster Initiative links together hot spots of food production and research from across the EU, encouraging them to develop regional strategies and, in the longer term, aiming to construct a true European Research Area in food and food sciences. Behind Europe's world-beating national and regional cuisines and foodstuffs lie a large number of diverse production and supply chains that bring local and regional specialities from the farm to the fork. Agriculture, and the many food industries that depend on it, are big business in the EU and – supported by the growing use of protected EU designations for regional foodstuffs – they can add much to Europe's competitiveness and added value, as well as supporting rural communities throughout the Union.

Regional food, regional focus

Bringing together many diverse EU-funded food research projects, the Network is promoting diversity and excellence as regional wealth creators; it encourages inter-regional

co-operation and learning, helping, in particular, to develop regional food RDI strategies that are integrated into regional policy-making; and it develops inter-regional projects – involving producers, processors and R&D performers using FP7, CIP and Structural Funding to combine strengths and create excellence. The Food Cluster Initiative started in 2007, and by 2010 there were 15 participating projects with partners from 19 countries, including pre-accession states.

A strong Danubian presence

The Danube macro-region is well represented in the Food Cluster Initiative. For example, the FP7 EU-Balkan Vegetables project is building R&D capacities at the Maritsa Vegetable Crops Research Institute in Bulgaria with the help of partners from France, Switzerland, the Netherlands and Italy. The aim is to establish Maritsa as a leading research institute in food research in the Balkan region. Likewise, the

Feed-to-Food project in Novi Sad in Serbia is boosting research into animal feed technologies in the region with partners from the UK, Germany, Romania and Lithuania. The Chromlab-Antioxidants project is improving the research and food-characterisation capacities of laboratories in FYROM, Serbia and Bulgaria to help capitalise on the health-related advantages of regional foodstuffs, such as fruits, grapes and herbal drinks.

At the level of the Food Cluster Initiative, the participants are convinced that broadening the resource base of regional food RTD infrastructure is vital for innovation in the networks' regions. In addition, project partners have identified three objectives for the future: responding to the growing demand for healthy food by reinforcing expertise; reinforcing productivity in the sector to foster exports; and boosting the RTD capacities of food-based companies to support innovation



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The European Technology Platform: Food for Life

European Technology Platforms (ETPs) are industry-led, public/private partnerships to drive innovation and unite stakeholder communities in reaching the strategic research objectives of key European industry sectors. Their main goals are to strengthen the European innovation process, improve knowledge transfer and stimulate European competitiveness. The ETP Food for Life is doing this across the food chain.

The agro-food industry is the largest manufacturing sector in the EU. In 2008, the food and drink industry alone had a turnover of EUR 965 billion from transforming around 70% of agricultural production and employing 4 million people – most of them in SMEs. The sector is also a leading global exporter with significant added value. It is thus central to future economic growth in the Union. The purpose of the ETP Food for Life is to set out a strategic research vision for the sector in areas such as food and health, food quality and manufacturing, food and the consumer, and sustainable food production. Among a series of objectives, the ETP aims to:

- Support a sustainable, successful and competitive agro-food industry;
- Encourage employment and entrepreneurial opportunities in the sector;
- Make healthy food choices easy for consumers;
- Contribute to sustainable development in Europe;
- Help producers compete on factors that are not price-sensitive;

- Promote the ‘fork-to-farm’ approach to add value to food chains.

As part of the ETP activities, a number of Member States have set up national food technology platforms to network national and regional activities and stakeholders, and to facilitate communications with the ETP. Several countries in the Danube macro-region have done this, including Germany, Austria, Slovakia, Hungary, Croatia, Serbia, Romania and Bulgaria. Furthermore, their national experts are active in the ETP working groups, for example in food safety, sustainable food production and technology transfer.

Feeding innovation

The cultural diversity, regional specialisations and long-standing traditions of the EU agro-food industry are key assets, according to the ETP’s vision document. However, innovation is essential if the sector is to respond to consumer demands for quality, safety, choice, convenience and affordability. Integrating the rich traditions of European

cuisine into an innovation-driven market place is a challenge to be met, explains the ETP. For this reason, the ETP proposes RDI efforts that take the consumer as the major driver, increased R&D investments from both private and public organisations targeted on the ETP strategy, creating and supporting partnerships that innovate more effectively, and involving SMEs in the innovation process.

Integrating Western Balkans' R&D into the Innovation Union

Improving scientific collaboration between the EU and the countries of the Western Balkans (WBC) is the aim of a strategic project for supporting the participation of their R&D communities in the European Research Area, as well as helping upgrade their capacities as they progress towards eventual EU accession. And closer co-operation also prepares their R&D performers for contributing to economic and social progress in the region.



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Launched in 2006, the WBC INCO-NET platform for scientific co-operation involves several countries from the Western Balkan region, including Albania, Croatia, FYROM, Montenegro, Serbia, Bosnia-Herzegovina and Kosovo. In addition to the WBC members, a number of EU Member States participate directly with several from the Danube region, namely Austria, Slovenia and Bulgaria. The platform supports dialogue between the EU and the WBC, as well as within the region, through regional S&T policy meetings which seek common solutions to cross-border challenges. The three core objectives of the platform are:

- Supporting the regional S&T dialogue;
- Identifying RDI priorities for their eventual inclusion in EU RTD programmes;
- Enhancing the participation of WBC researchers in EU projects and building capacities.

The WBC INCO-NET platform is participating in the response by the Western Balkan countries to the launch of the Innovation

Union initiative – which specifically states that candidate and potential candidate countries should contribute. National strategies to increase research funding, in particular from private sources, are of vital importance here. The 29 partners in the platform – including government ministries, agencies and R&D institutions from the EU, WBC and Turkey – plan to implement a number of measures over the next three years to support the innovation potential of the region. This is being done under the new phase of the initiative – WBC INCO-NET Enhanced.

Boosting national innovation systems

In 2011, the platform is developing an action plan for further co-operation between regional RDI stakeholders – to exchange best practices on innovation policies. Also, training events to improve technology transfer and awareness-raising on market demands will be targeted at the regional research communities. And in May 2011, the 4th International Conference on Entrepreneurship, Innovation and Regional

Development (ICEIRD 2011) was held in Ohrid in FYROM – where decision-makers, scientists and RDI practitioners from the business sector met to discuss promoting entrepreneurship and innovation in the WBC region.

E-Infrastructures for South-East Europe

Scientific and wider co-operation between European countries and regions needs a supporting electronic infrastructure to be effective. This means communication networks that enable fast and efficient data transmission, as well as computing and storage power for large-scale collaborative scientific work. The SEERA-EI initiative is aimed at furthering technical collaboration between countries in South-East Europe in the area of e-Infrastructure, by bringing together relevant policy and funding bodies in the region (ministries, state agencies) in a common dialogue regarding long-term vision, strategy, and planning – and linking it into the e-Infrastructures of the EU.

Innovation, R&D and education are heavy users of electronic communications. More so as their work takes on a strongly European dimension and practitioners need to communicate with colleagues and counterparts on the other side of Europe. It is for this reason that over the past decade the EU has built and is still upgrading the GEANT network – a multi-gigabit pan-European data communications network, reserved specifically for research and education use. Access to GEANT and other such infrastructure is vital for a country or region to participate fully in the European Research Area. Similarly, the EU has co-funded the establishment of pan-European computing platforms, such as the European Grid Initiative (EGI) and complementary high-performance computing installations.

Capitalising on momentum

SEERA-EI is the latest in a series of regional initiatives to enhance the e-connectivity of research and education networks as well as computing platforms in the countries of South-East Europe with their EU counterparts. The earlier SEEREN and SEE-GRID projects integrated most of the countries into a regional network and a regional computational grid, and then into the GEANT

network and the pan-European EGI grid. Successor projects are upgrading these connections today. SEERA-EI itself is capitalising on this momentum by providing an open forum for national programme managers in the south-east Europe region to exchange information and coordinate their own e-Infrastructure plans with those of the wider region and the EU. It encourages local commitment and aims to reduce fragmentation – supporting harmonisation and a common regional vision and strategy that will enable high-quality research collaboration across both the region and scientific fields.

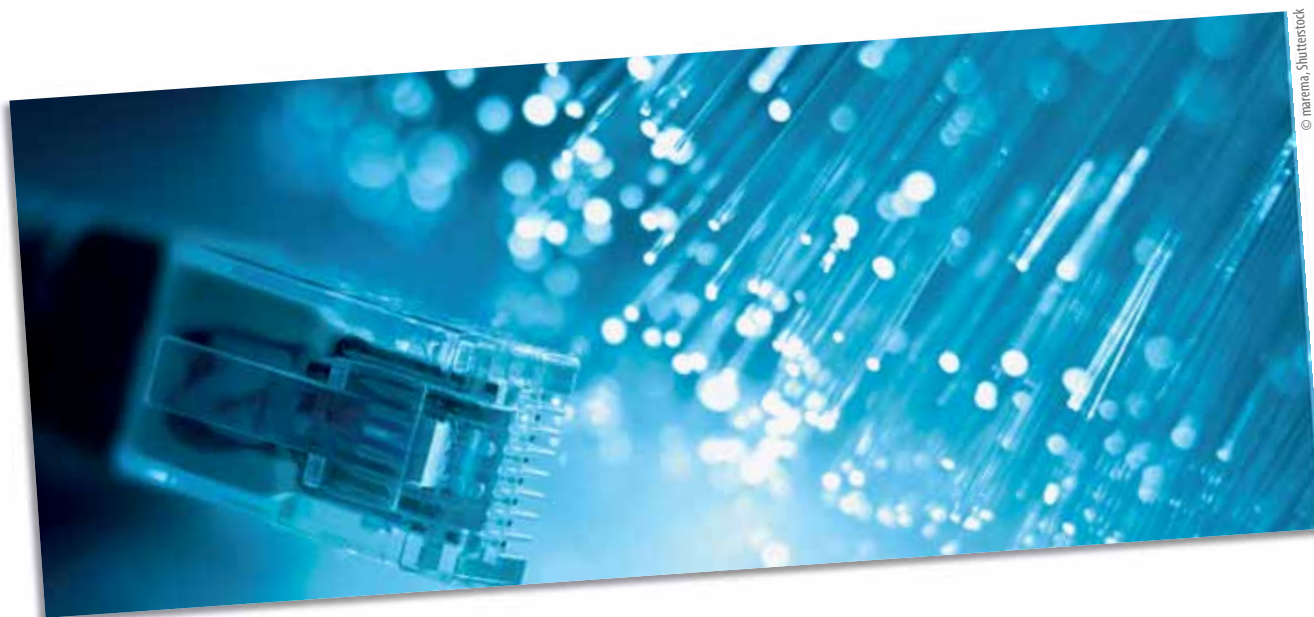
The digital Danube

SEERA-EI kicked off in 2009 and is part of the FP7 Research Infrastructures initiative. Led by the Greek Research and Technology Network (GRNET), the initiative has 19 beneficiaries and participants, many from the Danube macro-region – the project encompasses 10 countries, including all of the Western Balkans, as well as Romania, Bulgaria, Greece, Turkey and Moldova. Using the open-forum approach, national policy and programme managers, as well as operational partners, share information on e-Infrastructure plans, underline the importance of e-Infrastructures in national

ministries, identify complementary funding opportunities, and exchange views on the implications for their work of the latest ICT developments, such as cloud computing and other new paradigms.

User communities

Building on complementary past and current technical initiatives, the project facilitates the engagement of scientists from different countries in close collaboration in a number of scientific fields. User communities in the fields of meteorology, seismology and environmental protection are among the most prominent grid users, followed by computational physics, chemistry and bioinformatics. These Virtual Research Communities involve key players from the region in research that is most relevant to regional interests.



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Innovation solutions: down around the Delta

Environmental disasters show little respect for national borders, or EU borders for that matter. This is why much environmental policy-making in the Union is decided at EU level. For the same reason, cross-border environmental projects in co-operation with countries outside the Union are important, both to protect regional populations and as part of the EU's co-operative approach to its next-door neighbours. Two such projects are helping protect the inhabitants of regions to the North of the Danube Delta.

To the North of the Danube Delta, its tributaries, the Rivers Prut and Siret, rise in the Carpathian mountains in Ukraine and flow South through Romania. In the case of the Prut, the river forms the border with Moldova. The Carpathian region is one of the most flood-prone regions of Europe, and both of these river basins are liable to regular and extreme flooding events – as recently as 2010, the River Siret threatened to break its banks and flood the town of Sendreni. During such events, the damage to homes and businesses causes appreciable economic loss to the regions concerned.

EAST AVERT is a large-scale project in the framework of the Joint Operational Programme for Romania-Ukraine-Moldova that is acting to mitigate this threat. It is being implemented by the authorities from all three countries. The aim is to prevent flooding and protect against floods in the upper Siret and Prut river basins through implementing modern automated monitoring systems. The project also involves enhancing the capacity of a hydro-technical complex in order to reduce the vulnerability of border-region localities to flood risks, and studies of earlier flooding events to understand the different levels of risk and to produce hazard maps highlighting these. In addition, improvements to the civil warning system by better forecasting techniques and public information systems are planned.

Cleaning up the Delta

A further project from the Joint Operational Programme is also improving the quality of life for the citizens in Ukraine, Moldova and Romania. This one is making an inventory of the man-made sources of pollution in the lower Danube region, with the aim of then acting to improve the situation. The Ukrainian part of the Lower Danube lacks urban waste-water treatment facilities while the demand for water for irrigation raises the levels of pollution from farmland runoff. This means that significant quantities of organic waste accumulate in large water bodies situated in the flood plain which, in turn, leads to algal blooms and pollution further downstream. In addition, there are numerous chemical dumps and urban landfill sites in the drainage basins.

Since the Danube Delta is rapidly developing as a tourist destination – which also means more waste – and as the hydrological basin is shared between the three countries, a common project to address the problems through a cross-border strategy is in everyone's interest. In the inventory project, the three countries will jointly identify significant land-based sources of pollution, improve their monitoring, and develop a shared strategy to reduce or eliminate their impacts – all for the benefit of public health and economic potential in the wider region.

For the future, there are two projects under development which aim to improve environmental conditions within the regions North of the Danube Delta – they are planned to start in 2012.

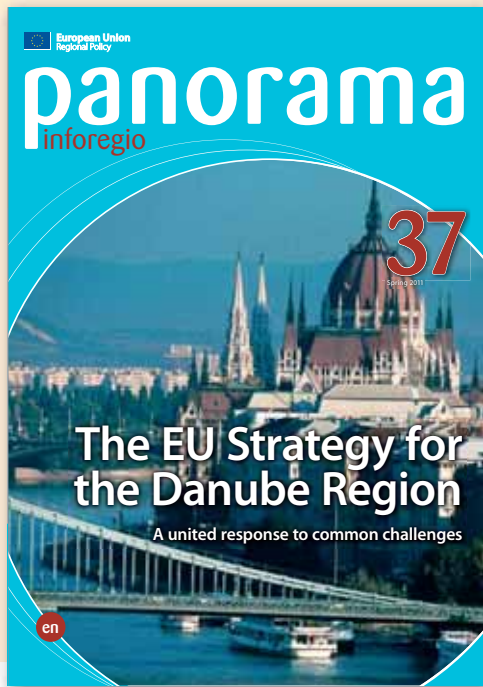


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Publications:

Panorama info regio No 37 (Spring 2011)

http://ec.europa.eu/regional_policy/cooperate/danube/documents_en.cfm#2



The European Union Strategy for the Danube Region (factsheet)
http://ec.europa.eu/regional_policy/cooperate/danube/documents_en.cfm#2



The EU Strategy for the Danube Region

http://ec.europa.eu/regional_policy/cooperate/danube/documents/leaflet/danube_2010_en.pdf



Territorial Cooperation onboard with the Danube Region strategy

http://ec.europa.eu/regional_policy/cooperate/danube/documents/interact_flyer.pdf



Community Research and Development Information Service

<http://cordis.europa.eu>

CORDIS – the Community Research and Development Information Service – is an interactive information platform that keeps you up-to-date with the latest news, progress and initiatives in European research and development (R&D) activities.

CORDIS is free of charge and offers access to R&D funding programmes of the EU as well as to information on partnerships and involvement in R&D activities, and on research projects and their results. As such, it is the official entry point to the Seventh Framework Programme (FP7), its specific programmes, activities, themes and latest developments.

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FP7 – The Participant Portal

<http://ec.europa.eu/research/participants/portal/page/home>

The Participant Portal is the Commission's website for all FP7 calls for proposal and some calls for tender. Direct access to the calls section: <http://ec.europa.eu/fp7calls>.

CORDIS redirects users to the Participant Portal, although e-mail notifications will continue temporarily and invite subscription to the equivalent Portal service.

To post calls from other DGs, use the CaP application available at <http://ec.europa.eu/fp7calls>.

Internal ECAS account holders must register at DIGIT-EFP7-SUPPORT@ec.europa.eu.

Useful links, contacts and further information:

- Participant Portal **RSS feeds**, visit the **Support -RSS section**: <http://ec.europa.eu/research/participants/portal/page/rss>;
- **e-mail notifications**, visit the **FAQ page**: <http://ec.europa.eu/research/participants/portal/page/faq>;
- **Deep-linking functionalities**, visit the **FAQ page**, the call section: "How can I create a deep link to a particular Call?": <http://ec.europa.eu/research/participants/portal/page/faq>;
- **Technical issues**, contact the **eFP7 Service desk**: <http://ec.europa.eu/research/participants/portal/page/contactus>.



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DG REGIO

http://ec.europa.eu/regional_policy/cooperate/danube/index_en.cfm

This website presents the main information on the EU Strategy for the Danube Region. A more detailed website presents the latest developments and activities for each Priority Area: <http://www.danube-region.eu/>



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