Montenegro
Ministry of Science

>BULLETIN

OF THE MINISTRY OF SCIENCE FOR 2019

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photo: Marko Prpić

Minister of Science
Dr. Sanja Damjanović

Over the course of previous three years, we have launched a number of new activities and made a breakthrough in building Montenegrin innovation ecosystem by developing our policies in two directions: strengthening excellence in science and encouraging innovations. We have also worked on infrastructural support, by joining large European research infrastructures and developing our own – in the form of science and technology park, as well as by initiating the development of a large-scale regional infrastructure in South East Europe.

The main highlight of the previous year was definitely the adoption of the Smart Specialisation Strategy (S3.me). We take particular pride in this achievement as we have shown that Montenegro follows the policy development at the EU level. This policy document sets the foundations for the new concept of development of Montenegro, but also helps us head towards the achievement of the UN Sustainable Development Goals and new EU2030 Agenda. In December 2019, Montenegro became the first Candidate Country that adopted a Smart Specialisation Strategy and had it verified by the European Commission. A turn made in the EU policies by the Green Deal is a chance for our country to contribute to the joint mission as our S3 strategic priorities correspond to those defined within the Green Deal. These are sustainable agriculture and food value chain, energy and sustainable environment, sustainable and health tourism, along with horizontal digitalisation in these sectors.

The new support instruments we have created and implemented, such as two new centres of excellence and grants for innovative projects, are already integrating and directing the academic and business community to objectives defined by the S3. Other instruments, such as scientific research projects and doctoral research projects are open to other areas as well, where some new future priority sectors can be created.

In all the supported projects, the focus was placed on hiring highly qualified staff. As a result, in the period from 2018 to 2019 about 120 people have been hired – most of whom are researchers and young engineers. In this manner, we have retained them in the country, hoping that they would eventually be able to contribute to sustainability of their positions and organisations themselves, once the entire ecosystem is further enhanced.

We are especially proud of the attractive scholarship programme for doctoral students at Montenegrin universities, where we already have 36 doctoral candidates working on their research projects with high level of commitment. They have been awarded scholarships that are on a par with those awarded in the EU, along with additional funding for research costs and international mobility. Over the course of two years, we have allocated EUR 1.5 million for this programme.

Montenegro's participation in EU research and innovation programmes – Horizon 2020, Eureka and COST – is on the increase and indicates a growing degree of internationalisation of our academic and business community.

An amount of EUR 1.8 million was earmarked for centres of excellence, an amount of EUR 1.5 million for innovative projects, and an amount of EUR 1.2 million for new scientific research projects. We are keeping a register of innovative organisations with 80 entities, including as many as 70 innovative companies.

For the first time, we have introduced instruments to strengthen autonomous innovation initiatives, specifically for pre-accelerator programmes for support to development of start-up ideas, intensive educational programmes in deficient areas identified by S3, projects strengthening innovation culture, and for guest lecturers. All these activities should empower the community that is the main driver of innovation.

At the end of last year, a tender was launched for the construction of a Science and Technology Park within the campus of the University of Montenegro. This institution, which will bring together the academic community, business sector and researchers, is a great endeavour of ours that will constitute a powerful engine for development of the innovation ecosystem.

The project of the regional centre of excellence – a large-scale research infrastructure in the region of South East Europe, the so-called SEEIIST institute, has been initiated and strongly led by Montenegro. In the previous year, significant results have been achieved in terms of political and technical aspects. We have entered the second phase of the project, Design Study phase, first and foremost thanks to the financial support of the European Commission, as well as of the renowned scientific institutes – CERN and GSI, which offered their resources for development of this phase. A high-level kick-off conference in this regard was held in September 2019 in Budva.

We will continue to pursue our mission strongly in the coming period as well, together with all partners who have recognised that our programmes and instruments respond to the needs and opportunities of our society and with whom we are jointly opening new horizons in the development of Montenegro.

SEEIIST REGIONAL PROJECT ENTERS DESIGN STUDY PHASE

SEEIIST – A CHANCE FOR SCIENTIFIC TRANSFORMATION OF THE REGION

Ever since the South East European International Institute for Sustainable Technologies (SEEIIST) regional project was initiated in mid-2017, it has quickly become arguably the most promising development project in the region. This is perhaps due to the fact that "Hadron Cancer Therapy and Biomedical Research with Protons and Heavy Ions" was selected as the project option. Namely, this treatment method is presently the latest and most successful method of treatment for a wide range of cancers and is currently used in four centres in Europe – but is still not available in the south east part of the continent.

Given that the ultimate goal of the project is to enable treatment of patients with state-of-the-art technology, the SEEIIST project plays a multiple role in the region, which is to promote technological development and research in the field of biomedicine. This approach will bring numerous benefits to the region, including, inter alia, the creation of a large number of jobs for scientists, as well as an effort to prevent brain drain and create the conditions for our talents to return to Montenegro once they complete their education abroad.

In addition, the SEEIIST project entails the creation of numerous opportunities for technology transfer, as well as for the development of complementary technologies, especially in the field of digitalisation and the use of green infrastructure. Namely, the existing renewable energy capacities in the region are enormous and this is why the SEEIIST project is developing as a green infrastructure concept, which would make it the first green hadron cancer therapy facility.

The Budva conference officially marked the start of the second phase in implementation of the SEEIIST project

PM Marković at the Western Balkans Summit in Poznań

DYNAMIC PROJECT DEVELOPMENT

All infrastructure development projects have clearly defined implementation phases and each of them requires clearly established timeframes: the first phase – project concept; the second phase – design study; the third phase – preparation for construction; the fourth phase – construction; the last phase – commissioning. What makes the SEEIIST project special is its rapid transition from the project concept phase to design study phase in 2019. This phase encompasses the preparation of a detailed project study, business plan, as well as determination of the location requirements. The design study phase can last three to four years (2019-2022 / 2023).

The year behind us was marked by major breakthroughs in the project implementation, both political and scientific-technological. The efforts aimed at project establishment were crowned with support that was obtained at the highest political level – namely, the SEEIIST Memorandum of Cooperation Framework was signed by six prime ministers of the countries of the region on 5 July 2019 at the Berlin Process Summit in Poznań, Poland. This document defines the joint activities of the countries participating in the implementation of the project's design study phase, establishing the legal requirements for continued project implementation.
Another very significant achievement was the first financial support received from the European Commission's Directorate-General for Research and Innovation (DG RTD), in the amount of EUR 1 million, with which the second phase of the project implementation was successfully initiated. This created the preconditions for establishment of the Project Group in 2019, led by experts from across Europe.

The official support of the International Atomic Energy Agency (IAEA), vital for the implementation of the capacity-building programmes needed for the SEEIIST project, was confirmed in November 2019 through the approval of EUR 0.5 million for the Regional Technical Support Project. Finally, in late 2019, support was also approved for six-month fellowships for three candidates from the region at renowned international scientific institutions, which will be implemented in 2020.

In the spirit of support for the concept of science diplomacy, the Swiss Government's general interest in providing support as a "neutral ground" for the further development of negotiations between the participants in the project was also confirmed. Another major step forward for the further project implementation in 2019 was the establishment of the SEEIIST Association, formed as a non-profit private entity in accordance with Swiss law and based in Geneva, which started to operate on 8 August 2019.

Minister Damjanović with Ambassador Stefan Estermann - Federal Department of Foreign Affairs (left), and Prof. Herwig Schopper (middle)

Additional breakthrough in the project implementation was made thanks to the strong support of 18 renowned European institutions and clinics involved in the design study phase, first and foremost CERN in Geneva and GSI in Darmstadt, where SEEIIST will be incubated until the final location is determined. With a view to developing the project as efficiently as possible, continuous efforts have been made at several levels, which resulted in the submission of project applications to "EU Framework Programme for Research and Innovation H2020", "European Research Infrastructure" and the "Design Study" calls for applications, through which additional funding in the amount of EUR 3 million will be sought that is needed to complete the second phase of the project.

With a view to marking the start of the SEEIIST design study phase, a kick-off meeting was organised on 18 September 2019 in Budva. The event was opened by Prime Minister of Montenegro Duško Marković, who assessed that the Balkans could no longer afford to wait for modern technological solutions to come to it, as well as that we needed active cores of scientific thought, new knowledge and credible international partners, and that SEEIIST project was an urgent need of the region. The meeting brought together more than 150 participants of different profiles, which was an opportunity for them to get informed about the status of the project and the future plans.

SEEIIST Steering Committee activities: STRENGTHENING REGIONAL COOPERATION AND SUPPORT CRUCIAL FOR FURTHER PROJECT DEVELOPMENT

The fifth meeting of the SEEIIST Steering Committee took place in Sarajevo on 27 June 2019. The main topics of the meeting included: signing of the Memorandum of Cooperation Framework for the SEEIIST project, Budva Kick-off meeting, establishment of SEEIIST Association, as well as the preparatory activities for the "Design Study" call for applications within the EU Framework Programme for Research and Innovation "Horizon 2020". Steering Committee members also defined the future steps on the SEEIIST project and considered the issue of the SEEIIST project positioning in the European Strategic Forum Research Infrastructure Roadmap (ESFRI).

The fifth meeting of the SEEIIST Steering Committee - Sarajevo

The sixth meeting of the SEEIIST Steering Committee took place in Budva on 19 September 2019. The main topics of the meeting included the implementation of the SEEIIST project preparatory phase, for which the European Commission has allocated EUR 1 million, while CERN and GSI have supported the idea of hosting the implementation of this phase. Furthermore, as a result of particular commitment of Minister Sanja Damjanović to project's implementation, her term of office as the SEEIIST Steering Committee Chairperson has been extended by another two years.

The sixth meeting of the SEEIIST Steering Committee - Budva

"Science and Innovation – 2030 Vision for the Western Balkans" conference

Minister Damjanović presents the SEEIIST project at the Ulcinj conference

PROMOTION AT IMPORTANT EVENTS: SEEIIST IN THE CONTEXT OF SCIENCE DIPLOMACY

During 2019, the SEEIIST project was presented at a number of international conferences and scientific events, as well as in several print and online national and international media.

Inter alia, SEEIIST was one of the topics of the first high-level forum on the topic of "Science and Innovation – 2030 Vision for the Western Balkans", which was organised by the Ministry of Science and Podgorica Club (Podgorički klub) on 9 April 2019 in Ulcinj. The project was also promoted within the 4th Forum of the EU Strategy for the Adriatic and Ionian Region (EUSAIR) and the 2nd Annual Conference of the Adriatic and Ionian Chambers of Commerce, Cities and Universities, held on 7-8 May 2019 in Budva, under a panel titled "Science, Innovation and Growth: A vision for the Adriatic-Ionian Region", focused on the SEEIIST project specifically.

Minister Damjanović was a special guest at the Third International Conference on Medical and Biological Engineering – CMBEBIH 2019, which was held on 16 May in Banjaluka. In addition, she participated in the COST Connect conference

Minister Damjanović as a special guest at the Third International Conference on Medical and Biological Engineering in Banjaluka

devoted to the future of European cancer research – "Beating Cancer by 2030: Mission Impossible?", which took place on 22 May 2019 in Brussels, constituting another opportunity for SEEIIST project promotion.

The diplomatic corps had a chance to learn about the progress made in the implementation of the SEEIIST project during a working breakfast organised for resident ambassadors on 11 June 2019 at Vila Gorica in Podgorica and a working breakfast organised for non-resident ambassadors on 19 June 2019 in the Embassy of Montenegro in Belgrade.

The project was also presented at the 1st International Biophysics Collaboration Meeting, which was held at the GSI Centre, where Minister Damjanović presented SEEIIST as a "centre for cancer therapy and biomedical research that should be used equally for patient treatment and for research".

Minister of Science also took part in the "Adria Space Conference", which took place on 4 October in Zagreb, with a focus on the joint efforts in the process of establishing a large research infrastructure based on state-of-the-art technology and on the importance of regional cooperation. On the occasion, Minister Damjanović drew attention to the potential for space sector development plans in terms of creating favourable conditions for space research on Earth, in the context of the SEEIIST project.

During an international medical event organised by the Association of Radiotherapy and Oncology of the Mediterranean Area (AROME), which took place on 10-12 October 2019 in Budva, Minister Damjanović had another opportunity to call upon the community of oncologists, radiologists and radiotherapists present to support one of the globally most successful cancer treatment methods – hadron cancer therapy.

Another presentation of the SEEIIST project was made at the International Clinical Engineering and Health Technology Management Congress, held in Rome on 21-22 October 2019. Within the panel session titled "Medical Equipment Management", organised by the International Union of Physical Sciences and Medicine (IUPESM), Minister Damjanović familiarised those present with the SEEIIST project, stressing the importance of state-of-the-art technologies in the treatment of various types of cancer by hadron therapy and the use of a wide range of heavy ions and carbon. The event was an ideal opportunity to indicate the importance of potential political and technical support for the project by the World Health Organization.

Minister Damjanović at the INNOVEIT conference organised by the European Institute of Innovation and Technology (EIT)

Flagship initiative >

Furthermore, Minister Damjanović gave a presentation of the SEEIIST project within the World Science Forum in Budapest, within a panel titled "Basic Science Infrastructures for Ethical and Responsible Collaborative Development", which was held on 22 November 2019. Additional presentation of the project was given at the Ministerial Meeting on Science held on 13 December 2019 in Trieste, where Minister Damjanović participated in a plenary discussion titled "Science Diplomacy and Capacity Building".

Finally, CEI ministers adopted the Declaration on Science, which expressed, inter alia, support for the regional project of South East Europe International Institute for Sustainable Technologies (SEEIIST), pointing to the importance of science and large-scale international research infrastructures as a basic instrument for better integration of the countries of the region.

SANJA DAMJANOVIĆ WITH CARLOS MOEDAS

SCIENCE|BUSINESS®

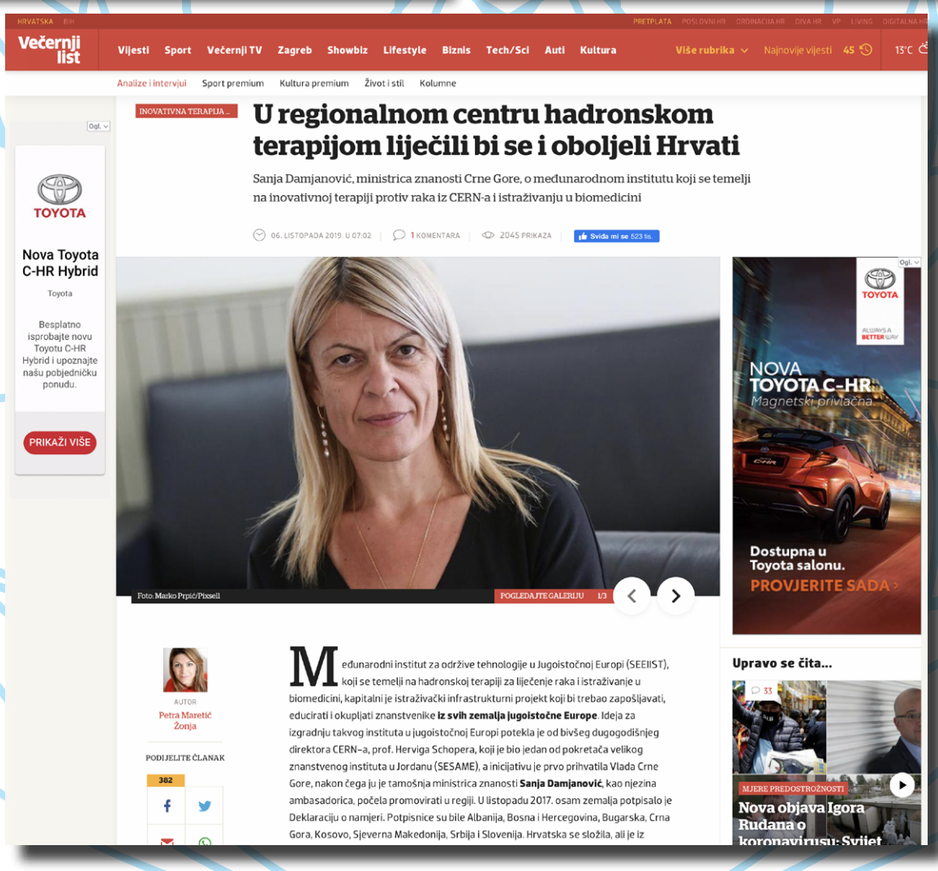
MONTENEGRO'S RESEARCH MINISTER WANTS TO HEAL WAR WOUNDS WITH SCIENCE

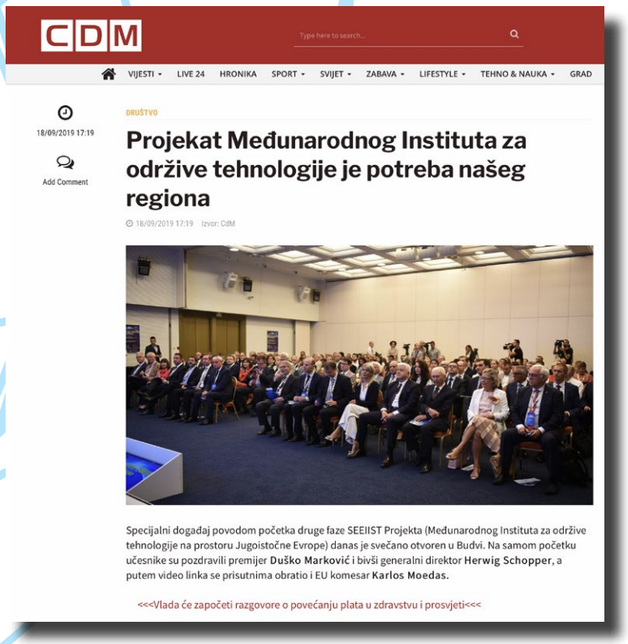
THE SEEIIST PROJECT IN MONTENEGRIN AND EUROPEAN MEDIA

On 31 October 2019, one of the most influential online science portals in Europe "Science Business" published two interviews: a viewpoint on the SEEIIST project by European Commissioner for Research, Innovation and Science Carlos Moedas and an interview by the Minister of Science of Montenegro as the Chairperson of the SEEIIST Steering Committee on the topic of the project.

With a view to informing the domestic public about the project as much as possible, the December episode of the "Researcher" show broadcasted by the Radio and Television of Montenegro was dedicated to the topic of "SEEIIST institute: from vision to reality". Furthermore, the domestic print media have published texts on the SEEIIST project topics on several occasions.

During 2019, articles were also published in renowned international scientific journals: CERN Courier, EuropysicsNews, Nature and ENLIGHT HIGHLIGHTS. In addition, on 6 October 2019, an interesting article was published in "Večernji list".





A NEW STEP FORWARD IN STRENGTHENING RESEARCH CAPACITIES IN MONTENEGRO **SIGNIFICANT IMPROVEMENTS IN RESEARCH INFRASTRUCTURE**

Due to the changes at the EU and regional level, as well as the major reform activities in the research and innovation system at the national level, the need has arisen to amend an important document – Roadmap for Research Infrastructure (2015-2020), which is why the Government of Montenegro adopted the Revised Roadmap for Research Infrastructure of Montenegro (2019-2020), with the objective to provide a detailed overview of the research infrastructure in Montenegro, to define the priorities and sources of financing in this area, to determine the potential for regional and large-scale European research infrastructure, as well as to identify the priority activities for the coming period. This is the first time that the document has addressed the issue of open access to research infrastructure, as part of the broader open access policy in science and innovation of the European Union.

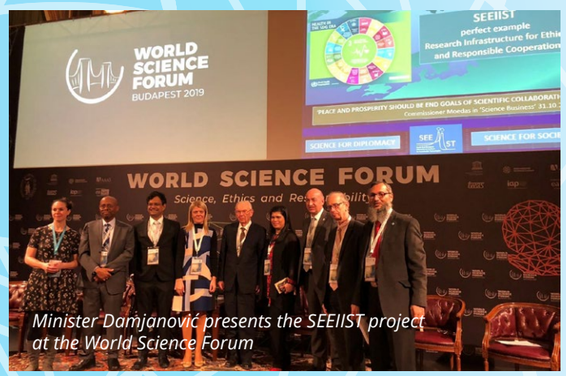
The drafting of this document was preceded by a new cycle of research equipment mapping, conducted in early 2019. The results of the process indicated good condition of the existing equipment, whose total value was estimated at EUR 28 million, 67% of which was invested in the past six years, which confirms a significant growth in investments in this area, including both the public and the beneficiary sector investments.

Montenegro commended fot its Smart Specialisation Strategy in Bucharest

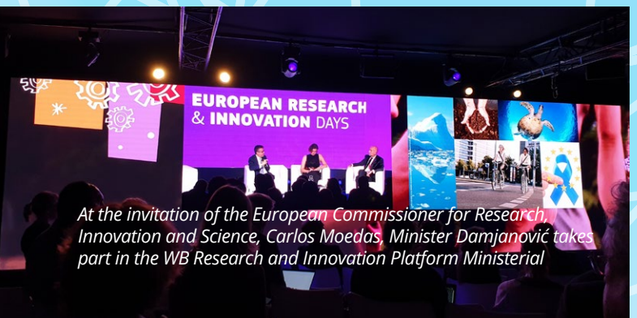
Minister Damjanović presents "EIT Venture Award" in Budapest

Minister Damjanović meets Tomáš Petříček, Minister of Foreign Affairs of the Czech Republic. On the occasion, an agreement on scientific and technological cooperation was signed between the two countries

Innovative solutions for traffic safety presented at the "Innovations for Life" Conference



Minister Damjanović presents the SEEIIST project at the World Science Forum



At the invitation of the European Commissioner for Research, Innovation and Science, Carlos Moedas, Minister Damjanović takes part in the WB Research and Innovation Platform Ministerial

HERIC project completed: the Ministry of Science invests about EUR 7 million

Important meetings >

Ninth Open Science Days Festival

PM Zaev extends full support of the Republic of North Macedonia to the SEEIIST project

Minister Damjanović takes part in the "Science meets Parliaments" event, held in the Parliament of Republic of Serbia

EUR 3.5 million awarded for 32 awards at the Annual Awards Ceremony of the Ministry of Science

Laboratory for HLA Typing opened. The Ministry of Science funded 70% of the total project costs

Minister Damjanović takes part in a plenary discussion "Science, Innovation and Growth: A vision for the Adriatic-Ionian Region", held in Budva

S3 – A NEW PAGE IN DEVELOPMENT OF MONTENEGRO

MONTENEGRO BECOMES THE FIRST CANDIDATE COUNTRY WHOSE SMART SPECIALISATION STRATEGY WAS VERIFIED BY THE EUROPEAN COMMISSION

Ministarstvo nauke je tokom 2019. godine imalo značajne aktivnosti s ciljem donošenja nacionalne Strategije pametne specijalizacije (S3).

In 2019, the Ministry of Science implemented significant activities with a view to adopting the national Smart Specialisation Strategy (S3).

The first international workshop in the Western Balkans dedicated to this process was organised by the Ministry of Science of Montenegro and the European Commission's Joint Research Centre (JRC) and took place in Podgorica on 5 February 2019. The event, which was attended by Charlina Vitcheva, Deputy Director General of the JRC, and renowned experts from more than fifteen countries of the Western Balkans and Europe, was of great importance for Montenegro in the final stages of S3 preparation, as the entrepreneurial discovery process was continued through intensive cooperation of different stakeholders: private, academic, civil and the public sector.

Minister Damjanović takes part in "Supporting Smart Specialisation Strategies and Technology Transfer in South-East Europe" conference

On 18 June 2019, Dr. Sanja Damjanović, the Minister of Science of Montenegro took part in the conference titled "Supporting Smart Specialisation Strategies and Technology Transfer in South-East Europe", which took place in Bucharest. At the event, Minister Damjanović presented the experience of Montenegro in the process of drafting the Strategy, as well as the major challenges faced by our country in that process.

The Government of Montenegro adopted the Smart Specialisation Strategy of Montenegro at its session held on 20 June 2019

The Smart Specialisation Strategy of Montenegro defines four priority areas, including three vertical ones: sustainable agriculture and food value chain, energy and sustainable environment, and sustainable and health tourism, as well as a horizontal priority area: information and communication technologies.

The Government of Montenegro adopted the Smart Specialisation Strategy of Montenegro (2019-2024) at its session held on 20 June 2019. The document was, inter alia, adopted thanks to strong political commitment at the national level and continued methodological support and advice of the Joint Research Centre, as well as the participation of Montenegrin S3 team in numerous workshops and seminars on smart specialisation in the country and abroad.

A nine-member Montenegrin delegation participated in a meeting with representatives of five European Commission's Directorates-General (DG JRC, DG RTD, DG NEAR, DG AGRI, DG GROW) in Seville on 29 October 2019, where S3 was discussed. Just as in the situations when assessments are done with regard to the EU Member States, the meeting provided a venue for discussing the quality of the document and its feasibility for implementation, with Montenegro officially receiving the EC's approval for the document in late December. In this way, Montenegro also became the first candidate country to adopt this significant strategy, which confirms that it is able to implement the policies of the European Union in the same way as EU Member States do.

With a view to implementing the S3 policy document, the Council for Innovations and Smart Specialisation was established by a decision of the Government of Montenegro. The body is tasked with coordination of the S3 implementation

The Council for Innovations and Smart Specialisation was established by a decision of the Government of Montenegro and is chaired by PM Duško Marković

activities at the highest political level and is composed of the most influential political representatives and renowned experts. The Council is chaired by the Prime Minister of Montenegro, Duško Marković. In October, the Action Plan for S3 Implementation in 2019 and 2020 was adopted, defining five strategic goals, five operational goals, as well as 39 activities.

The Strategy comes at the right moment, when the European Commission itself aligns the EU sectoral policies with the United Nations' Sustainable Development Goals. As our strategic priorities are in line with the UN2030 Agenda and its Sustainable Development Goals, the Smart Specialisation Strategy enables us to make a significant contribution to the EU dialogue, as well as to take major new steps towards Montenegro's EU integration.

UN2030 Agenda Sustainable Development Goals

S3 – A DEVELOPMENT METHOD BASED ON DOMESTIC INTELLIGENCE AND POTENTIAL

HEALTH TOURISM A NEW DEVELOPMENT OPPORTUNITY

Doc. dr Elvir Zvrko
Director of ENT and Maxillofacial Surgery Clinic of the Clinical Centre of Montenegro

Based on the strategic vision of Montenegro's development, four priority areas have been defined by applying the S3 methodology and implementing the entrepreneurial discovery process, one of which is sustainable and health tourism.

Health tourism is recording a steady growth and is one of the most promising segments of the global market offer. Given its geographical position, numerous natural tourist attractions and abundant cultural heritage, Montenegro fulfils all the conditions to become an internationally recognised health tourism destination.

Tourism and health constitute the basic pillars underpinning sustainable development, while the cooperation of the tourism and health sectors in Montenegro enables the achievement of synergistic effects for the promotion of health tourism, as well as of year-round tourism. Health tourism has the potential to become one of leading tourism products of Montenegro in a relatively short period of time. Such a view is supported by the fact that the prices of health services in Montenegro are relatively low compared to the countries of Western Europe and some countries in the Balkans, which makes them highly competitive at the international market.

With a view to promoting health tourism, various programmes have been identified that could be implemented under the S3 strategy, such as: rehabilitation programmes for neurological and orthopaedic patients and athletes, therapeutic programmes for patients with chronic non-communicable diseases and drug addicts, dental and aesthetic medicine services, nutrition, pharmacotherapy development, wellness tourism, etc.

Particularly significant potential is present in the use of advanced technologies in oncology within the regional project of establishing the South East European International Institute for Sustainable Technologies (SEEIIST), initiated by the Ministry of Science of Montenegro.

A VIEW FROM BRUSSELS

WHAT DOES "HORIZON EUROPE", THE NEXT RESEARCH AND INNOVATION FRAMEWORK PROGRAMME, HAVE TO OFFER

Reflection by Milena Milunović, representative of the Ministry of Science in the Mission of Montenegro to Brussels

In Brussels, the fall of 2019 is undoubtedly a major period of transition between the new parliament taking office in July and the next composition of the Commission.

Research and innovation (R&I) remain the key drivers of economic growth and job creation and a strong driver for building a European society and economy for the future. The time has come to further point to the crucial role played by R&I in EU growth and competitiveness. These are the reasons why the planning of the next research and innovation framework programme, Horizon Europe, is approached with more attention than any of its predecessors.

Horizon Europe, the next EU's research and innovation framework programme, which will replace the existing Horizon 2020, is planned for a seven-year period, from 2021 to 2027, with a proposed budget of EUR 94.1 billion and a view to catching up with global innovation leaders like USA and China. The features of the new framework programme include greater openness, new approach to partnerships, and an endeavour to simplify the procedures that have, despite the ongoing reforms, been criticised when it comes to H2020.

In April 2019, the European Parliament and the Council reached a political agreement on the key elements of the Horizon Europe proposal, according to which the programme would be structured in three pillars, supported by the activities aimed at widening participation and strengthening the European Research Area.

Pillar I (Excellent Science) will strengthen scientific leadership in the EU through the European Research Council (ERC), Marie Skłodowska-Curie Actions and Research Infrastructure. Pillar II (Global Challenges and European Industrial Competitiveness), as a central pillar, will address societal challenges and support industrial technologies to better respond to the EU and global priority policies and accelerate industrial transformation, while Pillar III (Innovative Europe) will be focused on fostering, nurturing and the use of innovation and the strengthening of European ecosystems that contribute to innovation, through the new European Innovation Council (EIC).

The part related to "Widening", i.e. expanding participation and strengthening the European Research Area aims to optimise the impact and attractiveness of the European Research Area and to encourage the participation of all Member States and associated countries. Within it, through the FP7 programme (a predecessor of H2020), capacity building of the Biotechnical and Electrical Engineering Faculty was supported.

A complete novelty in relation to H2020 is the so-called "Mission Oriented Approach". Namely, Horizon Europe will have specific missions focused on issues of great importance to European citizens, such as climate change adaptation, cancer, climate-neutral and smart cities; healthy oceans, seas, coastal and inland waters; healthy soil and food.

Caravan of the European Innovation Council. Podgorica, 19 September 2019

2019 – A SUCCESSFUL YEAR FOR MONTENEGRIN RESEARCH TEAMS IN HORIZON 2020

EUR 1.4 MILLION WITHDRAWN FOR NINE PROJECTS

The year behind us has brought significant benefits to Montenegrin research teams in Horizon 2020 programme, where, according to the data of the Ministry of Science, EUR 1.4 million was withdrawn for nine projects.

Within the support provided for participation in H2020 programme, the Ministry of science has, in cooperation with the European Commission, organised a Caravan of the European Innovation Council, which took place on 19 September 2019 in Podgorica. The event was attended by more than a hundred interested representatives of the business, academic and public sector, with novelties presented in terms of support to innovation within the activities of the European Innovation Council (EIC).

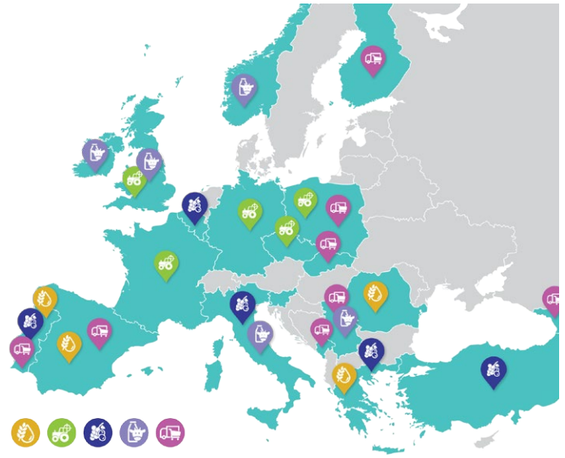
Horizon 2020 Outreach Event was held in Podgorica on 12 December 2019. The event was attended by about 90 representatives of institutions from different sectors and was focused on the H2020 programme rules and procedures, especially in terms of the financial and administrative project management and reporting.

Horizon 2020 Outreach Event. Podgorica, 12 December 2019

EU support programmes >

H2020 programme – success stories

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 779334. This project has received funding through the "Global Alliance for Chronic Diseases (GACD) prevention and management of mental disorders" (SCI-HCO-07-2017) funding call.



"IMPULSE" PROJECT

MAJOR PROGRESS IN IMPLEMENTATION OF DIALOG+ INTERVENTION PROJECT

Project manager: Prof. Lidija Injac Stevović
Implementing body: Clinical Centre of Montenegro

The realisation of the project titled *Implementation of an effective and cost-effective DIALOG+ intervention for patients with psychotic disorders (IMPULSE)*, financed under Horizon 2020 programme, is underway.
The lead researcher for our country is Prof. Lidija Injac Stevović, psychiatrist, while research assistants are psychologists Tamara Radojičić and Selman Repišti.
During 2019, the preliminary phase of the project was completed, in which *focus groups* were organised with beneficiaries of mental health services, their clinicians and family members, as well as with policy makers in the field of mental health. A report on the analysis of mental health policies in the participating countries was also submitted. For needs of the project, an *Advisory Board of Beneficiaries of Mental Health Services* was formed, as the beneficiaries represent experts from the perspective of their own experience in the treatment process. In addition, a training was held for the establishment of associations of beneficiaries of mental health services and the formation of associations of this type in Montenegro is underway. The aim of the activity is to involve those beneficiaries in the programme of resocialisation, rehabilitation and reintegration into the community, which corresponds to the process of deinstitutionalisation.
Currently, the main part of the study is in the final – *implementation phase* of the DIALOG+ intervention. Based on the data collected, this team has so far authored or co-authored one paper in a journal indexed in the Science Citation Index and three papers in our language. In addition, two more papers are being prepared.

"DEMETER" PROJECT

SMART FARMING PLATFORMS IN MONTENEGRO AS WELL

Project manager: Prof. Tomo Popović
Implementing body: University of Donja Gorica

The DEMETER project is a large-scale deployment of farmer centric interoperable smart farming-IoT based platforms delivered through a series of 20 pilots across 18 countries (of which 15 EU Member States). Involving 60 partners, DEMETER is one of the largest projects of this type in Europe and adopts a multi-actor approach across the value chain (demand and supply), with 25 deployment sites, 6,000 farmers and over 38,000 devices and sensors being deployed and participants involved come from different production sectors, production systems and different farm sizes and types.

DEMETER will encompass a multi system and multi data source integration considering not only Internet of Things but legacy systems, open data, geographical and satellite information, and in general will provide an open and interoperable data integration model. The implementation of the project will bring new business opportunities on the farm and in the wider agri-food economy, while concurrently contributing to the safeguarding of Europe's valuable natural resources. The goal of the DEMETER project is the creation of a secure and sustainable European IoT technology and business ecosystem whose impact could be transformative in the EC food and agriculture sector, and potentially across the world.

"ANDROMEDA" PROJECT

ENHANCED INFORMATION SHARING SYSTEM – BETTER MARITIME SAFETY

Project manager: Nexhat Kapidani
Implementing body: Maritime Safety Department of Montenegro

The Maritime Safety Department of Montenegro became part of an international consortium implementing EU Horizon2020 ANDROMEDA project, which involves 19 partners, participating as a final beneficiary of the planned project solutions.
The implementation of this project, managed in Montenegro by Nexhat Kapidani, will unlock the full potential of the Common Information Sharing Environment (CISE). ANDROMEDA project is also focusing on demonstrating the capacity of full integration of decision support tools in the field of border surveillance and maritime safety, such as search and rescue and safe navigation during control and operation at sea, also considering maritime accidents/disasters. The proposed solution will be implemented as a distributed set of systems and services interconnected according to the CISE principles. The goal of this integration is to foster faster detection of new events, better informed decision-making and achievement of joint understanding and action-taking in various cross-border situations.

COORDINATION OF MARITIME ASSETS FOR PERSISTENT AND SYSTEMATIC SURVEILLANCE (COMPASS2020)

MODERN OPERATIONAL SYSTEM FOR MARITIME BORDER SURVEILLANCE

Project manager: Nexhat Kapidani
Implementing body: Maritime Safety Department of Montenegro

The Maritime Safety Department of Montenegro became part of an international consortium which aims to demonstrate the combined use and seamless coordination of unmanned vehicles (aerial, sea surface and underwater) with other assets in maritime surveillance operations.
The Coordination of Maritime assets for Persistent and Systematic Surveillance (COMPASS2020) Project will introduce revolutionary changes in maritime traffic surveillance in Europe, with the use of seamless integration of unmanned vehicles (aerial, sea surface and underwater) with other assets into a single operational system. This innovative approach will constitute the first step towards the changes in operating procedures through which the maritime authorities use unmanned vehicles in their operations.
The major goal of the project is to demonstrate an operational solution to ensure persistent surveillance, increasing the situational awareness of coast guard and maritime authorities, and, thus, increasing the cost-effectiveness, availability and reliability of the operations. The solution will rely on an innovative operational concept that makes use of multiple aerial and underwater unmanned vehicles with improved capabilities, deployed from patrol ships or from land and will be supported by a central, multi-domain and interoperable mission system.

COST – EUROPEAN COOPERATION IN SCIENCE AND TECHNOLOGY

MONTENEGRIN RESEARCH TEAMS TAKE PART IN MORE THAN 100 COST ACTIONS IN 2019

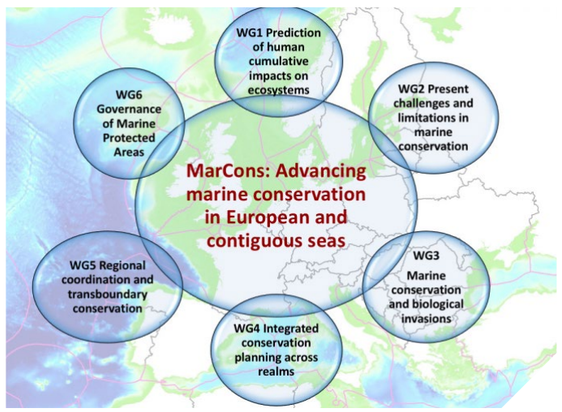
In cooperation with COST Association from Brussels, the Ministry of Science of Montenegro has organised an Info Day dedicated to European Cooperation in Science and Technology (COST) Programme on 17 September 2019 in Podgorica, primarily with a view to promote some of the activities under this important Programme. The COST Info Day was opened by Dr. Sanja Damjanović – Minister of Science, and Dr. Ronald de Bruin – COST Director, and was attended by more than 110 representatives of the academic, public and civil sector.

MONTENEGRIN SCIENCE IN COST: SUCCESS STORIES

MONTENEGRO AS AN ACTIVE PARTICIPANT IN THE PROTECTION OF EUROPEAN SEAS

Project manager: Dr. Vesna Mačić
Implementing body: Marine Biology Institute – University of Montenegro

Since 2016, the Marine Biology Institute of the University of Montenegro has implemented the project titled "Advancing marine conservation in the European and contiguous seas" – MarCons, which is managed by Dr. Vesna Mačić. The aim of the project is to link science and environmental planning activities with decision-makers, thus contributing to better conservation of the biodiversity of European seas.
In addition to the "common" problems in biodiversity preservation, the challenges of biodiversity preservation and ecosystem services sustainability are further complicated by climate change and imported invasive species that cause additional, mainly negative, chain consequences. Almost 30 countries are involved in this project, mainly from Europe, but also from North Africa, Asia and Australia, both in marine biology and terrestrial ecosystems and legislation areas, because protection, especially of marine ecosystems, can only be successfully implemented with intensive international and multidisciplinary collaboration.



CONTINUATION OF THE "UNDERSTANDING AND COMBATING AFRICAN SWINE FEVER IN EUROPE" PROJECT

Project manager: Dr. Bojan Adžić
Implementing body: Specialist Veterinary Laboratory

Montenegrin representatives in this project are veterinarians Bojan Adžić and Denis Pepić. In addition to them, the working groups also include veterinarians Nikola Pejović, Radoš Miković and Dejan Laušević. The project deals with the fight against African swine fever, a very dangerous contagious disease of domestic pigs and wild boars, which has decimated their populations in Eastern Europe in recent years.
As many as 32 COST countries are involved in the project, including Montenegro, two neighbouring countries, as well as two organisations (the European Commission and the European Food Safety Authority – EFSA).
In 2019, several activities were implemented under the project, one of them being the participation of the Montenegrin team in the meetings of the working groups in Uppsala, Sweden. It should be noted that several groups of scientists are developing methods of finding an effective vaccine in the best European and world virologic veterinary laboratories. Through this project, surveillance of wild boars has been expanded in Montenegro since 2019, with a view to ensuring early detection of the occurrence of African swine fever. Until the 2019/2020 hunting season, a serological examination of the body fluid of caught wild boars was required for the presence of antibodies against the causative agent of the disease.

GOOD INTERNATIONAL COOPERATION – A KEY TO SUCCESSFUL SCIENCE DIPLOMACY

MONTENEGRO IMPLEMENTS 100 PROJECTS IN 2019

Based on the current agreements on bilateral scientific and technological cooperation signed by the Government of Montenegro with governments of other countries, the Ministry of Science has continued to successfully implement bilateral scientific research projects.

In mid-September, the sixth call for applications was announced for co-financing scientific and technological cooperation of Montenegro and Republic of Slovenia for the period of 2020-2022. By the application deadline, as many as 56 applications were received. The evaluation of the projects submitted is underway, and the meeting of the joint commission is planned to be held in May 2020.

In 2019, a total of **100 projects** were implemented, with the following countries:

Republic of Serbia	35 projects funded in **2019-2020**
Republic of Italy, cooperation with the National Research Council of the Republic of Italy (CNR)	5 projects funded in 2019-2020. 2018-2020: 4 projects of "great importance" funded; 2018-2020: 5 projects funded **In total: 14**
People's Republic of China	2019-2020: **14 projects funded**
Republic of Austria	2019-2020: **7 projects funded**
Republic of Slovenia	August 2018–July 2020: **30 projects funded**

AGREEMENT ON SCIENTIFIC AND TECHNOLOGICAL COOPERATION SIGNED WITH THE CZECH REPUBLIC

The Agreement between the Government of Montenegro and the Government of the Czech Republic on Scientific and Technological Cooperation was signed on 10 June 2019, during the official visit of the Minister of Foreign Affairs of the Czech Republic, Tomáš Petříček, to Montenegro.

On the occasion, Minister of Science in the Government of Montenegro, Dr. Sanja Damjanović, and Ambassador of the Czech Republic to Montenegro, Karel Urban, signed the Agreement which enables Montenegrin researchers to work in research centres and institutes in the Czech Republic, which facilitates the use of state-of-the-art technologies and modern laboratories, exchange of knowledge and experience through joint research projects and the possibility of training for masters' and doctoral candidates engaged in projects.

Minister Damjanović and Ambassador of the Czech Republic to Montenegro Karel Urban sign the Agreement on Scientific and Technological Cooperation

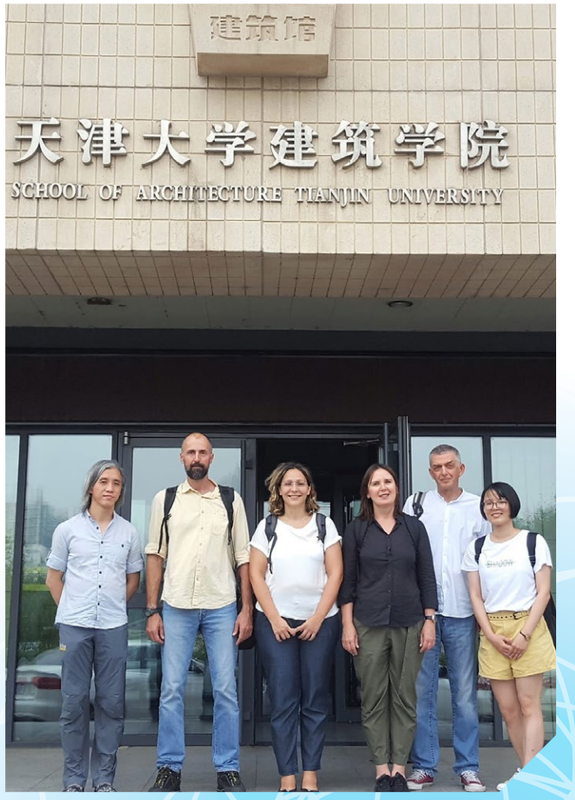
SCIENCE INTEGRATES MONTENEGRO AND THE WORLD

"LOCAL CULTURAL HERITAGE GIS: METHODOLOGY BASED ON THE EXAMPLES OF KUČKA MOUNTAIN NOMAD VILLAGES IN MONTENEGRO AND THE BEIJING-TIANJIN-HEBEI CULTURAL ROUTE SITES IN CHINA"

Manager: Dr. Olga Pelcer-Vujačić
Implementing body: History Institute of the University of Montenegro

This project was approved by the Ministry of Science of Montenegro and the Ministry of Science and Technology of the People's Republic of China. It involves researchers from the History Institute of the University of Montenegro Dr. Olga Pelcer-Vujačić (Team Manager), Dr. Tatjana Koprivica, Dr. Slavko Burzanović and Dr. Ivan Laković, while the Chinese team is composed of Dr. Jie HE (Team Manager), Chunyan ZHANG, Xiaoyan MI and Tao XU from the University of Tianjin. The project aims to develop methodologies underpinning geographic information system (GIS) for documentation and research of local cultural heritage based on typical areas in Montenegro and China. The project research will initially focus on the GIS database for cultural heritage for the purpose of information and access. After that, spatial analysis including ecological characteristics, distribution of heritage objects, interaction between people and the environment, and temporal changes on the GIS platform will be applied through this database.

The proposed research will introduce a leading specific GIS system / project of local heritage, making a significant global contribution to historical, archaeological and architectural GIS studies in local contexts from the point of view of methodological aspects in multidisciplinary domains. The outcome



of the project would facilitate the valorisation of cultural heritage for tourism purposes, first and foremost by creating relevant digital applications and other online tools and resources needed in contemporary cultural tourism trends. As a result, a better understanding of cultural heritage information will enhance the management, conservation and promotion capabilities.

COOPERATION WITH INTERNATIONAL ATOMIC ENERGY AGENCY

Within the programme cycle of 2018-2019, the International Atomic Energy Agency (IAEA) approved two national projects to Montenegro. These are: MNE5004 – "Strengthening Technical and Institutional Capacities of the National Reference Laboratory for Food and Feed Control", with approved funding of EUR 263,940 and MNE6005 – "Improving Paediatric Diagnostic in Computed Tomography Examinations", with approved funding of EUR 545,150.

On the basis of national, regional and interregional projects, professional training abroad was implemented for the personnel from Montenegro, in the form of scientific visits, scholarships, courses, trainings, seminars, workshops and meetings. Within the cycle of 2018-2019, Montenegrin institutions expressed their interest to get involved in 22 regional projects of the Agency headquartered in Vienna.

In 2018, the project applications were submitted for the new IAEA 2020–2021 Technical Cooperation Programme. From Montenegro, two projects were submitted under the "national projects" category: Strengthening Technical, Scientific and Research Capacities of Food Safety Laboratories of the Public Health Institute of Montenegro (MNE6006) and Establishment of the National Training Centre for Radiation Protection of the University of Montenegro (MNE9007).

In the "regional projects" category, Montenegro has applied with the project titled "Human Resources Development for the Establishment of Hadron Cancer Therapy within the South East European International Institute for Sustainable Technologies (SEEIIST)", worth EUR 500,000 (RER6039). At the session of the Board of Governors held in November 2019, all three projects were approved for funding within the 2020-2021 Technical Cooperation Programme.

PRE-ACCESSION ASSISTANCE (IPA)

Under the IPA 2014-2020, the Ministry of Science is involved in two sectors:

- The Education, Employment and Social Policy sector, where the activities for the implementation of the Sectoral Operational Programme for the period of 2015-2017 are realised. The Ministry of Science implements Activity 2.4 – "Supporting the employment of PhD degree holders in academic institutions and the economic sector", worth a total of EUR 1,116,000. The amount of EUR 1,000,000 will be earmarked for the implementation of projects under the Collaborative Grant Scheme for Innovative Project Ideas, expected to be implemented as of 2020, while a contract worth EUR 116,000 was signed with ICE – International Consulting Expertise, with a view to providing technical assistance to future grant beneficiaries in the implementation of projects under the aforementioned grant scheme.

- The Competitiveness and Innovation sector – where the activities for the implementation of support activities for the Innovation and Entrepreneurship Centre "Tehnopolis" in Nikšić are ongoing, aimed at staff training, equipment specification, as well as the activities on finalisation of the Smart Specialisation Strategy. The activities focused on equipping the three IPC Tehnopolis Nikšić laboratories are also underway. Within the aforementioned sector, support for innovative start-ups and support for upgrading Naučna mreža (Science Network) are planned through the 2016 Annual Action Programme. Under the 2017 Annual Action Programme, support is planned for the establishment of the first science and technology park in Podgorica.

International cooperation >

#WE ARE NATO

The implementation of NATO SpS Advanced Regional Civil Emergency Coordination Pilot (ARCECP) is underway. The ARCECP is a project under the NATO Science for Peace and Security Programme. The aim of the project is to improve the protection and rescue system through the development and implementation of the NICS system (the latest generation of emergency management and coordination systems) in Montenegro, Croatia, Northern Macedonia and Bosnia and Herzegovina. Furthermore, the project enables the integration of all first-line response units and other relevant institutions in the protection and rescue system into a single system for communication, coordination and exchange of information. This system, first and foremost, provides for better logistics in the field, enabling the rescuers to have all the necessary information for the current accident / event in addition to communication capabilities. The project budget for the protection and rescue system in Montenegro is EUR 831,600.

NICS is a mobile, web-based platform (Internet system) for commanding and controlling all types of accidents, from first responders – in regular events, to extreme situations, catastrophic accidents, and even emergencies, which require the involvement of the entire national apparatus, as well as for the engagement of protection and rescue units of other countries with which bilateral cooperation agreements have been concluded.

During 2019, intensive activities were undertaken on priority tasks, development of NICS and its adaptation to the protection and rescue system, testing of the NICS system and elimination of identified irregularities (bugs), linking with the existing CoordCom system, as well as on the project tasks of young researchers in the project.

COOPERATION WITH THE INTERNATIONAL CENTRE FOR GENETIC ENGINEERING AND BIOTECHNOLOGY (ICGEB)

The Ministry of Science organised the first visit of ICGEB high-level delegation to Montenegro in November 2019. The meeting of the representatives of the Ministry of Science with the Director-General of the International Centre for Genetic Engineering and Biotechnology from Trieste Lawrence Banks and his associate Vittorio Venturi was held on 18 November 2019 in Podgorica. The aim of this high-level visit was to present the programmes of the International Centre for Genetic Engineering and Biotechnology with a view to ensuring the intensive participation of the Montenegrin scientific and research community in them in the coming period.

"The level of development of biotechnology and molecular biology, and in general the science of living systems, largely depend on expensive technologies that highly developed countries can afford more easily than developing countries such as Montenegro. The International Centre for Genetic Engineering and Biotechnology (ICGEB) offers Montenegrin researchers and students the opportunity to stay in state-of-the-art ICGEB laboratories, as well as in other reputable institutions located in member states of this organisation, by applying for mobility programmes, doctoral and postdoctoral studies and research grants. The mobility that can be exercised by researchers and students in this way provides not only valuable professional, but also life experience. This is a nice way to network talented and reputable researchers working within multidisciplinary teams with the aim of finding specific solutions, but also an opportunity for people of different nationalities and cultures to meet."

***Dr Jelena Zindović**, National ICGEB Liaison Officer*

High-level delegation of the International Centre for Genetic Engineering and Biotechnology from Trieste presents the programmes offered

The meeting was also attended by the heads of scientific research institutions implementing the same or similar programmes in order for the key stakeholders to be informed about the opportunities offered by this organisation, and thus provide their employees with a more concrete approach in acquiring new skills and improving the existing ones.

During their first visit to Montenegro, ICGEB representatives held a workshop for target groups within the research community in order to present the programmes offered by this international organisation to its member states. Particular focus of the workshop was placed on the possibilities of cooperation through scientific research work, the implementation of long and short study visits in ICGEB laboratories, the award of research grants, collaborative research programmes, and participation in courses, meetings and workshops.

COOPERATION WITH EUROPEAN MOLECULAR BIOLOGY ORGANIZATION (EMBO)

With a view to promote the programme of fellowships offered by the European Molecular Biology Organization (EMBO), a presentation intended for the academic community was organised in Podgorica.

A presentation for all those present and interested in this form of professional development and knowledge advancement was held by David del Álamo Rodríguez, EMBO Fellowships Programme Head. In addition to presenting the work of the European Molecular Biology Organization, its fellowships and possibilities provided to the students, Mr. Rodriguez particularly focused on the so-called Short-Term Fellowships as one of the simplest ways for researchers to obtain the funding for their stay and work in prestigious laboratories in the EMBO Member States.

On that occasion, Mr. Rodríguez familiarised the attendees with the application process, requirements and deadlines to be observed, stressing the importance of meeting the criteria when preparing an application. Director Rodríguez encouraged students to apply, stating that there were good chances that their applications would be accepted.

As part of his visit to Montenegro, Mr. Rodríguez met with Minister Damjanović as well. On this occasion, new ideas were considered for future cooperation of Montenegro with EMBO, as well as for the promotion of EMBO fellowships.

David del Álamo Rodríguez, EMBO Fellowships Programme Head presents the application process, requirements and deadlines for the scheme

THE FIRST RESEARCH PROJECT APPROVED TO BIOTECHNICAL FACULTY UNDER THE ICGEB-CRP RESEARCH GRANTS 2019

The research project of Biotechnical Faculty of the University of Montenegro titled "Next generation diagnostics and characterisation for emerging viruses and virus-like agents of pome and stone fruits in Montenegro" is one of the positively evaluated projects under the ICGEB-CRP Research Grants 2019 of the International Centre for Genetic Engineering and Biotechnology (ICGEB). The project implementation will contribute to widening the competencies of the research team to include the scientifically current topics in the field of next generation diagnostics and characterisation for emerging viruses and virus-like agents of pome and stone fruits in Montenegro. The partners in the project are Biotechnical Faculty of the University of Ljubljana and the Faculty of Natural Sciences and Mathematics of the University of Zagreb. The project will be funded over the course of three years (2020-2022).

INCREASING INTEREST IN PARTICIPATION IN EUREKA PROJECTS

Montenegro has been a full member of the Eureka Network ever since June 2012. Eureka is a European network for financing market-oriented R&D projects, with the aim of boosting European competitiveness by supporting entrepreneurship, research centres and universities. The programme particularly encourages small and medium-sized enterprises to cooperate with international partners in initiating R&D and innovation activities, as well as to invest in R&D in order to strengthen their innovative capacity.

The main support instrument of the Ministry of Science in this regard is the Annual Call for Applications for Co-financing Research and Innovation Activities. This scheme provides for co-financing of cooperation projects between research institutions and companies from Montenegro, which relate to their participation as coordinators or partners in Eureka projects. During 2019, five new projects were supported, two of which specifically stimulate economic development in the northern region of Montenegro.

With a view to promoting the Eureka Programme, on 3 July 2019, the Chamber of Economy of Montenegro and the Ministry of Science of Montenegro organised an info day titled "EUREKA programme: application and participation". The event held in Podgorica gathered about 60 participants, who had a chance to learn about the conditions of participation in the programme.

Due to intensive interest of scientific research institutions and enterprises in participation in this programme, the Ministry of Science has recently increased the budget for Eureka Programme from EUR 90,000 to EUR 120,000.

www.eurekanetwork.org

>> SCIENCE COMMUNITY INTERNATIONALISATION
GSI/FAIR OPENS ITS DOORS TO MONTENEGRIN STUDENTS AND RESEARCHERS

Within the **GET_Involved Programme, GSI/FAIR** from Darmstadt (**Helmholtz Center for Heavy Ion Research**) offers international students and young researchers professional practice / training / research in a broad range of areas, such as: biophysics, materials research (including nanomaterials), radiation therapy and radiation protection, accelerator technology, magnet superconductors, atomic physics, plasma physics, nuclear physics and chemistry.

In cooperation with GSI/FAIR, the Ministry of Science of Montenegro has announced a **Call for the Internship and Research Programme 2019 at GSI/FAIR. Based on this Call, a panel composed of international evaluators has selected two candidates – young researchers from Montenegro**, who will spend three months of 2020 at GSI/FAIR.

The **programme provides Montenegrin students and young researchers with a unique experience of working on specific FAIR research projects**, which will facilitate capacity building and foster synergy between Montenegro and GSI/FAIR.

>> MONTENEGRO TAKES PART IN CERN DETECTOR DEVELOPMENT FOR THE FIRST TIME
COOPERATION OF MONTENEGRIN AND EUROPEAN SCIENTISTS THROUGH RD50 COLLABORATION

In mid-November 2019, the Collaboration Board of CERN-based RD50 Science Collaboration (Radiation hard semiconductor devices for very high luminosity colliders), which includes more than 60 institutions from around the world, unanimously supported an application of scientists from the University of Montenegro, enabling it to become a full member of the Collaboration.

For the first time in the history of the country, Montenegrin scientists will take part, as a national team, in the development of silicon detectors for the existing and future hadron colliders. The group of scientists from the University of Montenegro will be involved in the development of state-of-the-art sensors needed to upgrade the detectors on ATLAS and CMS experiments.

By taking part in RD50 Collaboration, not only will the scientists from Montenegro work on the analysis of data measured via CERN detectors, but they will also take an active role in the process of building new hadron colliders.

>> MONTENEGRO OFFICIALLY JOINS IPPOG GROUP
MINISTER DAMJANOVIĆ SIGNS A MEMORANDUM OF UNDERSTANDING

In late October 2019, Minister Damjanović signed a Memorandum of Understanding in CERN (Geneva), establishing a Cooperation Programme with the International Particle Physics Outreach Group (IPPOG). Under the auspices of this Group, the International Masterclass in Particle Physics has been organised at the University of Montenegro for three consecutive years.

The mission of IPPOG Group is to maximise educational and promotional activities in the field of particle physics, as well as to encourage younger generations to opt for careers in science, technology, engineering and mathematics. The educational and scientific programmes implemented within the Group are intended for primary and secondary school students, teachers, journalists and communicators, key actors and policy makers, as well as the general public.

Membership in international organisations and renowned scientific institutions is of particular importance as it, in addition to having a positive impact on the economy, significantly contributes to a downward trend in terms of brain drain.

Minister Damjanović signs a Memorandum of Understanding with the International Particle Physics Outreach Group

Recipients of doctoral scholarships with Minister Damjanović and PM Marković

>> 17 NEW SCHOLARSHIPS APPROVED

EUR 1.5 MILLION EARMARKED IN TWO YEARS FOR STRENGTHENING HUMAN RESOURCES AND RESEARCH CAPACITIES OF YOUNG DOCTORAL STUDENTS

In April 2019, the Ministry of Science announced the second consecutive Call for Applications for Doctoral Scholarships at Universities in Montenegro in 2019/2020. Based on the results of the evaluation, the Ministry has approved 17 scholarships, earmarking EUR 750,000 for this purpose. The scholarships are awarded for a period of up to three years and include a monthly remuneration of EUR 700 for doctoral students, exemption from tuition fees for doctoral studies at universities in Montenegro, as well as significant research funding.

The first call for applications for attractive doctoral scholarships and research under this scheme was announced in 2018, when the Ministry of Science selected 19 candidates and allocated about EUR 750,000 to that end. In 2019, that number has increased to 36, because additional 17 candidates have been selected under the new call, which means that EUR 1.5 million has been allocated in two years to strengthen human resources and research capacities of young doctoral students. This is one of the most attractive calls for applications of the Ministry of Science, with conditions on a par with those offered in developed countries of the European Union.

The Ministry of Science plans to announce the same call for applications in 2020 as well, within an effort to create a critical mass of about 50 young researchers, with the ultimate goal of retaining talents in Montenegro.

VIEWPOINT OF A SCHOLARSHIP RECIPIENT

"I would like to thank the Ministry of Science of Montenegro for enabling my colleagues and me to carry out our doctoral research. Our role is to learn, think, and create. It is a very positive development that our thirst for knowledge has found its way to the Ministry, which recognised our needs through its mechanisms and found a way to support them in mutual interest."-
Neda Bošković

>> A NEW CORNER FOR NEW SCIENTIFIC ACHIEVEMENTS

INTERACTIVE SPACE OPENED FOR RECIPIENTS OF DOCTORAL SCHOLARSHIPS

As of recently, the University of Montenegro has another facility to offer. An Interactive Space that is intended for students of the University of Montenegro was opened by Prof. Danilo Nikolić, Rector of the University of Montenegro, and Dr. Sanja Damjanović, Minister of Science, who presented the doctoral students with cards that enable access to the Interactive Space. The funds for this purpose have been allocated through the HERIC programme, which is supported by the Government of Montenegro.

"I hope that we will have more similar facilities in the future. As part of our continued cooperation with the University of Montenegro, the Ministry of Science plans to open a Science and Technology Park in the university campus, as a multiplied space underpinning not only new ideas, but also the values that our society needs", Minister Damjanović indicated.

Minister Damjanović opens the Interactive Space

>> INTENSIFIED COOPERATION WITH THE EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH (CERN)

CERN SUMMER STUDENT PROGRAMME 2019 HELD

Pursuant to the Agreement between the Government of Montenegro and the European Organization for Nuclear Research (CERN) on Scientific and Technical Cooperation in the Field of High-Energy Physics, in mid-November 2018 the Ministry of Science announced a call for applications for CERN Summer Student Programme 2019.

Under the call, twelve applications were received. Following the consideration of all applications, the commission unanimously determined a proposal for the Ministry of Science for selection of four candidates for "CERN Summer Student Programme 2019" (to be held in the period from July to August 2019).
The opportunity to advance their knowledge in this renowned research institution was provided to: Dragić Krstajić, Tamara Ninković, Katarina Milačić and Miloš Manojlović.

>> SIGNIFICANT FUNDS FOR ADVANCING SCIENTIFIC RESEARCH ACTIVITY

EUR 1.5 MILLION EARMARKED FOR 15 SCIENTIFIC RESEARCH PROJECTS

In late October 2018, the Ministry of Science announced a Call for Applications for Grants for Scientific Research Projects. Of the 72 project proposals submitted to the Call for Applications, after an international project evaluation process, the Ministry published a ranking list of the projects accepted for co-financing, encompassing the 15 best-rated scientific research projects that were rated with 90 points or more (out of 100 points).
Project implementation commenced in April 2019, with an implementation deadline of up to two years. As for the funding, of the total amount of EUR 1.5 million, the Ministry co-finances EUR 1.2 million and the co-financing of institutions is around EUR 300,000.

Grants have been awarded to the following projects:

Projects	Total project value
The project of the History Institute, which will enrich the Montenegrin heritage and present it to the general public through a mobile application.	116.718,83 €
The project of the Public Health Institute of Montenegro, which will examine the health risks assessment in the Municipality of Pljevlja, with a view to protecting the well-being of the population.	110.945,16 €
The project of the Faculty of Electrical Engineering, which will be implemented in the field of energy and will deal with the improvement of energy efficiency.	67.599,36 €
The project of the Faculty of Medicine, which will work on improving the grouping of cancer and Alzheimer's disease patients by using innovative diagnostic methods, with the aim of providing the best possible individual treatment for patients.	98.686,12 €
The New Perspectives in Humanities project, which will deal with the development and networking of the humanities and modern technologies.	103.800,00 €
The project implemented by the Faculty of Philosophy, which will explore the manner of forming dominant socio-cultural identities in pre-school children in Montenegro.	95.184,28 €
The Studies in Humanities project, which will explore the process of transformation of Montenegrin society on the path of European integration.	107.100,00 €
The project implemented by the Clinical Centre of Montenegro, which will standardise the methodology for food iodine intake, with the aim of disease prevention and health promotion.	107.112,00 €
The project implemented by the Faculty of Information Systems and Technologies, which will explore the use of artificial intelligence in neurosurgery in the process of implementing a patient-centred treatment concept.	142.693,20 €
The project of the Faculty of Natural Sciences and Mathematics, which will address endangered ecosystems in the Skadar Lake basin through the formation of a DNA barcode library that will enable regular quality monitoring.	94.752,70 €
The project of the Faculty of Information Systems and Technologies, which will deal with the digital transformation of agricultural production and the food supply chain in Montenegro.	116.223,00 €
The project of the Marine Biology Institute, which will focus on shellfish and fish research, and one of the goals is to develop innovative "waste-free" technology with the possibility to use shellfish in biomedicine and pharmacology.	65.000,00 €
The project of the Faculty for Food Technology, Food Safety and Ecology, which will determine the authenticity of honey, with the aim of creating an autochthonous Montenegrin product on the international market.	96.085,20 €
The project of the Music Academy, which will deal with the research, preservation and affirmation of the musical heritage of Montenegro.	97.264,23 €
The project implemented by the Faculty of Philosophy, which will strengthen academic integrity in higher education.	122.604,82

Calls for applications >

Minister Damjanović with recipients of scientific achievement awards: Darko Ivanović (left), Slavica Tomović, David Kalaj (right)

>> AWARDS PRESENTED FOR SCIENTIFIC ACHIEVEMENTS

MINISTRY OF SCIENCE PROMOTES EXCELLENCE IN SCIENCE

The Ministry of Science presented the annual awards for scientific achievements in 2019, in the following categories:

1. The most successful scientist.
   1.a. The most successful scientist up to the age of 30;
   1.b. The most successful scientist over the age of 30.

2. Inventor/innovator of the most successful patent or innovative solution.

"To me, this recognition comes as an expression of appreciation for my work, as well as for the work of the research team to which I belong, and an encouragement for further scientific development. The scientific results for which I have been awarded are the result of teamwork of a research group on telecommunications networks, led by Prof. Igor Radusinović and operating within the Telecommunications Centre of the Faculty of Electrical Engineering in Podgorica.
Recognition of the positive endeavours, scientific achievements and opportunities for their application by the competent institutions in their own country is of particular importance to any young person engaged in research and development. This award gives me additional motivation to persist on the path of education and research, which I believe should be among the top priorities of the national policies and overall development strategies in our country. In addition, I believe this is one way of raising the importance of scientific research to a higher level, with the ultimate goal of creating a knowledge-based society."
***Slavica Tomović**, the most successful scientist up to the age of 30*

"The award of the Ministry of Science of Montenegro for the most successful scientist in Montenegro in 2019 is an exceptional recognition to me. It confirms that individual commissions and institutions value the success of scientists on the basis of qualitative indicators and, in this specific case, the publication of a large number of high-quality scientific papers in the globally renowned journals in the field of mathematics. The mission of a mathematician is to create new results, prove new theorems and create new theories, and above all, to promote mathematics among younger generations, creating scientific successors. In this effort, I have achieved remarkable results both nationally and internationally. I would like to thank the Ministry of Science for supporting the establishment of good international cooperation through its bilateral projects.
It was precisely through bilateral projects with China and Austria that I have been able to establish substantial scientific cooperation with relevant mathematicians in those countries."
***David Kalaj**, the most successful scientist over the age of 30*

"The award I received on behalf of "The Badger Crew" is a reward for our years-long work on a product that will revolutionise conference tourism and advertising.
It comes as an incentive and a new type of energy that we needed on the difficult path to success in the international market. Now that we are close to that objective, it is nice to feel supported by our own country that is just making the first steps in digitalisation and wants to feel part of the IT revolution. We would particularly like to emphasise the support from Minister Damjanović, as well as that coming from the key person in that department – Mr. Ivanović and, of course, the software team of Amplitudo, led by visionary Mr. Novović. I am sure that 2020 will be our year, and we are yet to show it."
***Darko Ivanović**, inventor/innovator of the most successful patent or innovative solution*

>> SUPPORT TO PROMISING IDEAS
INTENSIVE SUPPORT TO EARLY-STAGE DEVELOPMENT OF INNOVATIVE START-UP PROJECTS

In July 2019, the Ministry of Science announced a public call for applications for strategic partners in the implementation of Pre-acceleration Programme for Innovative Start-ups. Namely, this activity was envisaged within the Programme of Incentives for Innovative Start-ups in Montenegro (2019-2021), with a view to selecting high-quality and promising ideas of innovative teams, as well as to provide them with the opportunity to significantly advance their ideas in terms of technical and business aspects. Under the scheme, two pre-acceleration programmes have been accepted for financing: "BoostMeUp", implemented by a consortium led by Innovation and Entrepreneurship Centre Tehnopolis Nikšić, and "Start-up Activator", implemented by a consortium led by M-Tel Digital Factory. The value of support provided by the Ministry of Science is EUR 130,000, while the consortia will provide for co-financing in the amount of EUR 78,000. The support programmes will be implemented in 2020 and are expected to boost several high-quality innovative start-up projects, making them ready for further stages of growth and development.

The public call for applications has integrated a requirement that support programmes are focused on the priority areas of the Smart Specialisation Strategy of Montenegro and the UN Sustainable Development Goals.

>> KEY SUPPORT PROGRAMME FOR SCIENTISTS AND RESEARCHERS
FUNDS AVAILABLE UNDER THE 2019 CALL FOR APPLICATIONS INCREASE BY 38%

The Ministry of Science has announced a call for co-financing scientific research and innovation activities in 2019, in the amount of EUR 550,000.

This scheme is one of the key mechanisms for providing support to the scientific research community, in those domains where Montenegrin scientists and researchers need it the most.

The amount of funds available through the 2019 scheme is the largest so far, with an increase of 38% (EUR 150,000) compared to 2018.

By implementing such special support instruments, the Government of Montenegro and the Ministry of Science create the possibility for all the actors in the scientific research community of Montenegro to enhance their work by participating in conferences, as well as by organising scientific conferences in Montenegro, publishing papers in open access journals, editing high quality domestic scientific journals, protecting inventions, using mobility schemes to visit more developed institutions, admitting guest lecturers, organising promotional events in the field of science and innovation, and networking with foreign partners through international programmes. The co-financing scheme also rewards researchers who have completed their doctoral studies.

Finally, the call for applications identified new opportunities this year, as it also includes support envisaged by the recently adopted Programme of Incentives for Innovative Start-ups in Montenegro.

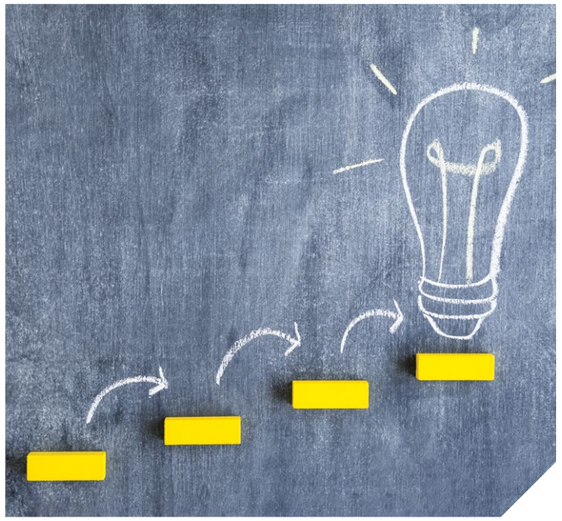
FOCUS ON STRENGTHENING INNOVATION CAPACITIES
SPECIAL INCENTIVES FOR NEW ENTERPRISES AND JOBS

The Government of Montenegro has recognised the potential of developing innovative and fast-growing companies as a driving force for our economy that could open new businesses with the support of high technologies. Accordingly, in 2018, the Programme of Incentives for Innovative Start-ups in Montenegro was adopted, as an instrument that would contribute to the establishment of attractive conditions for the Montenegrin innovation ecosystem, with a primary focus on innovative start-ups.

The scheme would provide capable and successful people in Montenegro, who are operating on the international market, with stimulating conditions to start their own business in Montenegro and thus exercise a profound impact on the local economy.

In this regard, the Ministry of Science has initiated the development of a special Law on Incentives for Research and Innovation, the adoption of which is planned by the end of 2020. An inter-agency working group has been formed with a task to prepare the law that will regulate the system and incentives for innovation activity carried out by legal and natural persons. The working group is composed of members from the Ministry of Science, Ministry of Finance, Ministry of Economy, Tax Administration, University of Montenegro, the business sector and NGOs.

The idea is to create an environment that will significantly reduce the operating costs of innovative start-ups and companies investing in R&D, while introducing tax incentives for investors in innovative projects. Given that they devote a significant amount of time to product research and development in early stages of their work, start-ups initially do not generate revenue, which is why their initial costs need to be minimised. The aforementioned legislative amendments will support this type of companies and create a database of start-ups supported under the law.



In 2019, the Ministry of Science has also started funding two innovative start-up pre-accelerator programmes, and the most successful ones will have access to significant grants for innovative projects (in the amounts of up to EUR 100,000).

STUDENTS GAIN NEW KNOWLEDGE
SUMMER START-UP SCHOOL HELD

The first Montenegrin Summer Start-up School 2019 was held in September, under the auspices of the Ministry of Science, University of Montenegro and Confucius Institute at the University of Montenegro. Within this project, the most successful 30 students of the University of Montenegro and other universities in Montenegro were given the opportunity to familiarise themselves with the concept of start-ups through various lectures and presentations, as well as practical activities and workshops. The idea of the school is for the best students to learn about the world of start-ups, under a programme that is not part of the regular classes they attend at universities.

The First Montenegrin Summer Start-up School takes place

"Globally, the start-up founders are mostly younger people, aged 20 to 30, and this is why the idea of this summer school is for the best students to learn about the world of start-ups, under a programme that is not part of the regular classes they attend at universities. Having a high-quality mentor is another important link for successful implementation of start-up ideas."

***Doc. dr Milena Đukanović**, Project Manager.*

>> SUPPORT TO THE START-UP COMMUNITY

EUR 1.4 MILLION FOR 23 INNOVATIVE PROJECTS

Support for innovative projects was tested as early as in 2017, when a pilot call for applications was announced with a view to identifying actors in the innovation system of Montenegro, as well as presenting different innovative ideas and determining the existing innovation potentials. Despite the multitude of interested institutions engaged in development and numerous innovative ideas presented, the instrument indicated that it was necessary to strengthen the capacities of innovative organisations, as well as to train potential applicants, but also to enhance support through more specific determination of the goals. Based on the 2017 call for applications, the co-financing of five innovative projects has been approved. The co-financing of the Ministry of Science amounted to EUR 61,000, while the co-financing of beneficiaries accounted for EUR 155,000. One project was successfully concluded in 2018; the implementation of two projects was completed in December 2019, while the completion of the remaining two projects is expected in March 2020.

Based on lessons learned from the shortcomings of the preceding pilot call for applications, a significant improvement was made with the 2018-2020 Programme of Grants for Innovative Projects, on the basis of which a call for applications was launched for a total amount of EUR 1 million. Following the completion of a two-stage international evaluation, 10 grants were awarded for innovative projects. The total value of innovative projects was around EUR 1.2 million, of which the co-financing of the Ministry of Science accounted for over EUR 700,000, while the co-financing of the grant holders amounted to about EUR 450,000. The projects last one to two years and are implemented in the period of 2019-2020. Two projects have already been finalised and an evaluation of the final report is expected in the first quarter of 2020, while the remaining eight have been successfully implemented during 2019.

Due to positive effects of this programme, reflected in the promotion of new jobs in the sector of research, development and innovation and improvements in the establishment of partnerships between science and the business sector, it was decided that this financial instrument is made a key support instrument for innovation in the implementation of Smart Specialisation Strategy of Montenegro – S3 (2019-2024). Thus, in early July 2019, the Government of Montenegro adopted the Collaborative Innovation Programme (2019-2024), which fully relies on the priorities identified in the S3 Strategy. Only a day later, the first in a series of calls for applications for co-financing innovative projects was announced, in the total amount of EUR 700,000. Under the call for applications, 34 project proposals were received, 30 of which were submitted by innovative companies, which testifies to the strong interest of the business sector and confirms that this is an adequate type of support. Following a two-stage international evaluation, eight proposals for innovative projects were assessed positively and accepted for co-financing, in the total amount of EUR 1 million, of which co-financing by the Ministry of Science amounts to approximately EUR 615,000, while the beneficiaries' co-financing accounts for about EUR 300,000.

Innovation >

Over the course of last three years, EUR 1.4 million was earmarked for 23 innovative projects, with innovative companies performing the role of implementing bodies in 80% of them. The outcome of this type of support is that we received an additional EUR 0.5 for each invested EUR 1, since co-financing by the beneficiaries was a mandatory requirement for participation in all calls for applications.

Marko Simeunović, Assistant Professor, University of Donja Gorica

"By focusing on innovation and commercialisation of potential solutions, the Ministry of Science of Montenegro has significantly influenced academic institutions to intensify cooperation with the business sector and to contribute with their activities to solving the real problems it faces. This transfer of knowledge from the academic community to the industry is precisely an area in which our country lags behind the countries of Western Europe and it is therefore necessary to invest significant efforts to change this situation and to restore the mutual trust between the two sectors. I believe that by hiring young people (primarily students), we have commenced the process of creating a pool of experts who will act as this link and pillar of development of the entire economy tomorrow, using the experience gained from the implementation of innovative projects. Through this financial and logistical support, we, the academic community, have a chance to learn how to transform ideas into commercial products."

***Doc. dr Marko Simeunović**, manager of innovative projects "Real-time environmental parameters monitoring system" and "Smart milk monitoring system".*

Minister Damjanović with recipients of grants for innovative projects

Project design - Science and Technology Park in Podgorica

>> LINKING ACADEMIC AND BUSINESS SECTORS
SCIENCE AND TECHNOLOGY PARK OF MONTENEGRO STARTS OPERATING

The Science and Technology Park of Montenegro (STP) is a priority infrastructure project of the Government of Montenegro, worth EUR 12 million. The STP was established with a view to integrating and stimulating innovative, scientific, entrepreneurial and economic capacities in Montenegro, and will be directly involved in the implementation of certain measures and instruments of support to the academic and business community defined by the S3 Strategy, with the mission of strengthening the links between the business sector and the scientific and academic community and creating innovative start-ups.

The Government of Montenegro approved the Agreement Establishing the Science and Technology Park in mid-January 2019. In July, the STP Articles of Association were adopted and a Board of Directors was established, with members appointed by the founders according to their share in STP – the Government appointed three and the University two members of the Board of Directors.

By registration in the Central Register of Business Entities of Montenegro on 20 September 2019, STP became operational. The establishment of the legal entity status created the conditions to initiate activities aimed at establishing support models and operating and organisational systems based on which the STP will provide services to future and existing entrepreneurs, innovators, researchers and companies.

NEW DEVELOPMENTS UNDER THE PROJECT

In July 2019, the Adaptation Project for the future STP building on the campus of the University of Montenegro was completed. Funds in the amount of EUR 121,000.00 were provided under the HERIC project, after which a revision of the Adaptation Project was carried out for the preparation of a tender for the execution of works.
A tender for contractors for adaptation of the STP building was announced on 26 December 2019.
The CEO of the Science and Technology Park of Montenegro was appointed on the basis of a public competition.

The intention of the Ministry of Science is to make STP a place where innovative entrepreneurs will meet scientists and students, future entrepreneurs and investors, where promising business opportunities will turn into reality. It is expected that certain high-tech foreign companies will also be interested in establishing their hubs here – as places for employee education and guidance, as well as that innovative start-ups, young businesses with the potential for rapid growth and entry into the wider market will have their place in the STP.

>> SUPPORT TO MULTIDISCIPLINARY TEAMS
PROJECTS WORTH EUR 2.5 MILLION

In 2019, the Ministry of Science announced a call for applications for establishment of centres of excellence. Centres of excellence constitute one of the Smart Specialisation Strategy implementing instruments and should bring together the best researchers and experts, focusing on full-scale research with a view to directing science and the country's economy to a dynamic development. The call for applications, which involved a two-stage international evaluation, placed two high-quality projects at the top of the ranking list. Their total value is around EUR 2.5 million, of which the co-financing from the national budget over a period of three years amounts to EUR 1.8 million.

CENTRE OF EXCELLENCE FOR DIGITALISATION IN THE FIELD OF FOOD SAFETY AND FOOD PRODUCTS AUTHENTICITY – FOODHUB

A CONSORTIUM OF 12 NATIONAL AND INTERNATIONAL INSTITUTIONS TO WORK ON FOOD SAFETY

Project manager: Prof. Aleksandra Martinović
Implementing body: University of Donja Gorica

FoodHub is a research-innovation programme whose implementation commenced in January 2020, based on the application to the call for applications announced by the Ministry of Science of Montenegro.
Food processing is a promising industrial sector in Montenegro. However, the establishment of companies is slow and hindered by problems such as lack of technology expertise, poor quality and product safety and insufficient human resources. Application of new practices based on science and modern accomplishments that create innovation can increase the efficiency and competitiveness of companies in the food industry, which is a challenge for the academic community.
With a view to supporting the development of the food sector, the centre of excellence will conduct research into and develop technological solutions that can be applied in industrial and traditional food production processes while maintaining product authenticity and traditional characteristics. The centre will

achieve this by engaging and bringing together a broad range of actors, including farmers, companies, research institutions, consumers, public institutions, etc.
A consortium of 12 national and international institutions led by the University of Donja Gorica will build the necessary capacities and initiate development in the field of food safety assessment, becoming a strong pillar in protecting the health of the entire population and improving sustainable food production in Montenegro based on original resources and new technologies.
The centre of excellence will strive to offer reliable, science-based solutions for eliminating food safety risks and identifying hazards, developing digital risk assessment tools, reliable product certification, and monitoring food authenticity, ready for use in food production and tourism. In addition to a structured, scientific risk assessment that includes laboratory and genetic analyses, FoodHub will develop a corresponding software with integrated data management, database connectivity and interactive food chain monitoring.
The consortium will also address the burning issue of lack of expertise and training in Montenegro in the field of advanced science relevant to the food sector, such as bioinformatics, molecular biology, genomics. FoodHub will have an important mission to enhance and utilise the existing food production capabilities in Montenegro and to create a critical mass of scientists, companies and foreign partners to develop sustainable food production and follow EU policy trends.
Corresponding priorities under the S3 Strategy: Agriculture and food value chain; ICT

>> CENTRE OF EXCELLENCE FOR BIOMEDICAL RESEARCH IN MONTENEGRO (CEBIMER)

ENGAGEMENT IN HEALTH CARE BECOMES A PLEASURE

Project manager: Dr. Vjeroslava Slavić
Implementing body: "Dr Simo Milošević" Institute

The Centre of Excellence for Biomedical Research in Montenegro (CEBIMER) is a research-innovation programme whose implementation commenced in January 2020, based on the application to the call for applications announced by the Ministry of Science of Montenegro. The programme brings together several institutions in the field of health, biology and chemistry, coordinated by the "Dr. Simo Milošević" Institute from Igalo, the largest state-owned health tourism and rehabilitation company in the country. The Institute has its own scientific research centre and is closely connected with the educational base of the University of Montenegro.

Programme components:
1. Development and application of apheresis therapy as a preventive medicine product at the Igalo Institute for service users with some form of metabolic syndrome; further research into the therapy at the Faculty of Medicine and Clinical Centre of Montenegro, specifically for patients with diabetes, through the application of standard and newly identified biomarkers, and the integration of personalised medicine approaches; creation and accreditation of new curricula and therapeutic protocols for extracorporeal treatment; establishment of an external quality control system in medical laboratories in Montenegro.
2. Comprehensive characterisation of medicinal sea mud from the Igalo basin and analysis of its further potential for commercialisation, which will be led by the Faculty of Natural Sciences and Mathematics of the University of Montenegro;
3. Comprehensive characterisation of selected autochthonous plant species from Montenegro that have potentially high nutritional and therapeutic value, which will provide sufficient data for better nutrition in the service of nutritional therapy. The results will enable a new offer of traditional dishes from Montenegro and will be available to the hospitality sector, all with the aim of promoting health tourism. In addition, characterisation of aromatic herbs for use in the production of cosmetic products will be performed, as well as characterisation of alcoholically extractable herbs for the possible production of tinctures and traditional alcoholic beverages with relevant health claims. This component will be led by the Centre for Ecotoxicological Research from Podgorica.
4. The chemical research of Schiff bases will be a continuation of the research of the Faculty of Natural Sciences and Mathematics, with a focus on their antioxidant and antimicrobial activity and property preservation potential.
The research programme will be implemented in partnership with renowned international institutions (Slovenia, Serbia, Germany), employing several young researchers and associates and having a high degree of openness and communication with the education, medical, tourism and other business sectors.
Corresponding priorities under the S3 Strategy: Health tourism; Sustainable environment
CEBIMER podržava prioritet S3 strategije: zdravstveni turizam; održiva životna sredina

"Dr Simo Milošević" Institute, Igalo

TECHNOLOGY AND SOCIETY DEVELOPMENT

The ninth consecutive Open Science Days festival took place on 1-5 October at several locations in Podgorica, Danilovgrad, Nikšić, Bar, Cetinje, Kotor, Pljevlja, Šavnik, Žabljak and Plužine.

The central idea of this year's Open Science Days festival "Technology and Society Development" was to explore the manner in which innovation in the fields of artificial intelligence, big data, 3D printing, robotics, new materials science, biotechnology and longevity research and the like leads to changes in almost all aspects of communication, work and life.

The festival's high quality and success were confirmed through a number of scientific exhibitions, lectures, workshops, interactive presentations, as well as through increasing interest of the public and involvement of renowned associates and lecturers from the country, region and beyond.

MINISTER DAMJANOVIĆ PRESENTS AWARDS TO ROŽAJE GYMNASIUM STUDENTS

SPACE CUBE ARRIVES TO NASA

Minister of Science Dr. Sanja Damjanović presented the students of "30. septembar" Gymnasium from Rožaje with financial awards today, congratulating them on an extraordinary innovation they brought to the education in Montenegro. On this occasion, the students explained how they had come up with the idea to design and develop their "Cubes in Space" experiment.
Rožaje Gymnasium students Zahir Šabotić, Almira Ljaić, Aiša Kalač, Almin Nurković and Idria Adrović and their mentor Mirsada Šabotić designed an experiment that involved a 4cm x 4cm x 4cm cube launched into space by a scientific balloon supported by NASA (National Aeronautics and Space Administration) Agency from New Mexico. Their experiment implied sending a tuft of dyed and undyed hair into space, with the assumption that dyed hair would turn to dust, while the undyed tuft would only alter the hair molecular structure, pointing to the harmfulness of radiation and UV rays. The cube has returned from space to NASA headquarters and will soon arrive to Montenegro, when the assumption will be verified upon its opening.

Minister Damjanović with Rožaje gymnasium students

>> WORLD SCIENCE DAY **“OPEN SCIENCE” CELEBRATED IN PODGORICA**

In cooperation with the Natural History Museum and the Centre for Protection and Research of Birds, the Ministry of Science of Montenegro marked the UNESCO’s World Science Day for Peace and Development on 11 November 2019.

Groups of pupils from “Božidar Vuković Podgoričanin” Primary School and Parents Association’s “Učionica Družionica” have visited the permanent exhibition of the Natural History Museum of Montenegro and the “Mareza Research Station” exhibition, organised by the Centre for Protection and Research of Birds of Montenegro.

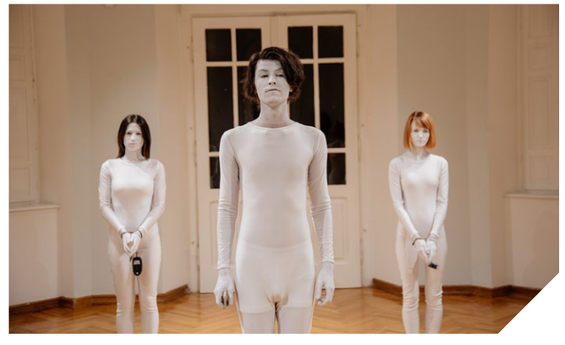
This year’s World Science Day for Peace and Development was devoted to the theme of “Open Science”.

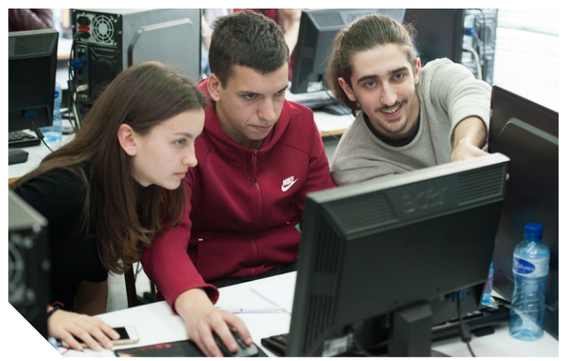
As a tool, open science makes science more accessible, opening scientific processes and making them more inclusive, while increasing access and opening science results to everyone. UNESCO’s World Science Day for Peace and Development aims to inform the citizens about science development through better integration of science and society. Furthermore, it emphasises the role played by the scientists in spreading our understanding of the planet on which we live and in making our society more sustainable.

Ministry of Science of Montenegro marks the UNESCO’s World Science Day for Peace and Development

>> CERN’S INTERNATIONAL PARTICLE PHYSICS MASTERCLASS IN PODGORICA FOR THE THIRD TIME **STUDENTS WORK WITH REAL LHC DATA**

In cooperation with the University of Montenegro – Faculty of Natural Sciences and Mathematics and the European Organization for Nuclear Research (CERN), under the auspices of CERN and International Particle Physics Outreach Group (IPPOG), the Ministry of Science organised an International Particle Physics Masterclass on 20 March 2019.
High school students in Montenegro had another opportunity to devote some time to particle physics, analysing real data collected in one of the experiments at the Large Hadron Collider (LHC), the largest particle accelerator in the world, located in Switzerland.
The first part of the programme encompassed a virtual visit to CERN, which was followed by lectures of active young researchers who reflected on the topics and methodology of basic research of matter, particles and forces active among them, providing also an insight into complex experiments by enabling students to readily conduct exercises with real data obtained in one of the CERN experiments in the second part of the programme.
Finally, at the end of the programme, students had the opportunity to take part in a video conference in English, discussing the results with other students and scientists around the world who had their Masterclass on the same day.





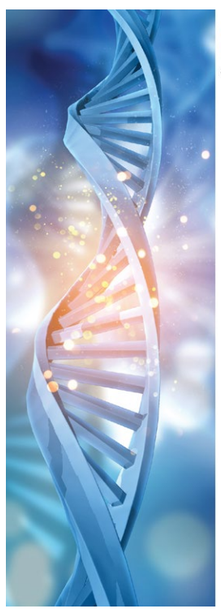
CERN’s International Particle Physics Masterclass held in Podgorica for the third time

LOVĆEN RESEARCH STATION

In the period from 6 to 14 August 2019, the Montenegrin Science Promotion Foundation implemented two camps under the joint name of Lovćen Research Station. The summer school of science empowers young talents to commit themselves to the active study of fundamental sciences and to compete with their peers from across the world. The other part of the school, a research camp for younger participants called "The Planet in Your Hands", aims to raise awareness about Montenegro as a possible European model of sustainable ecological development.
Within the events, students had the opportunity to learn about the challenges in the field of environment and biodiversity protection, as well as about the basics of energy efficiency and green energy, architecture, organic food production, climatology and research work elements, as well as about the various environmental aspects of today.
The summer camps have gathered 56 students from Montenegro.

>> PRONA IMPLEMENTS WINTER AND SUMMER SCHOOL OF SCIENCE
WINTER SCHOOL ATTENDED BY 19 HIGH SCHOOL STUDENTS

The eleventh winter school of science was organised by Montenegrin Science Promotion Foundation (PRONA), in the period from 16 to 18 March 2019 in Ivanova Korita. The aim of the project was to bring together the most talented high school students in Montenegro, who, with the help of their mentors, researched the given phenomenon during the school and prepared a scientific paper on the given topic. In this way, young talents were introduced to the basics of scientific research work with a view to further developing and strengthening their creative potential. The idea of the scheme is to improve the scientific literacy of selected students and to increase the interest and motivation of talented high school students to engage in the natural sciences.
The opportunity to attend the school in Lovćen was used by 19 high school students from all cities of Montenegro. As many as 16 mentors were involved in the work with the school participants.



>> MOLECULAR BIOLOGY SUMMER SCHOOL HELD IN KOTOR
COOPERATION WITH EMBL CONTINUED

In cooperation with EMBL (European Molecular Biology Laboratory) and Marine Biology Institute (University of Montenegro), the Ministry of Science of Montenegro organised a molecular biology summer school on 9-11 September 2019 in Kotor.
The molecular biology summer school was intended for the most successful students of biological, medical and biotechnical sciences, and was opened by Dr. Detlev Arendt.
This year's event, dedicated to single cell sequencing, represented a unique opportunity for students to become acquainted with state-of-the-art molecular biology research techniques, with the dissociation of experimental organisms into single cells and their study.

>> EUR 48,000 EARMARKED FOR NGO SECTOR
"SCIENCE, ECONOMY AND SOCIETY" CALL FOR APPLICATIONS IMPLEMENTED

In 2019, the Ministry of Science continued its cooperation with the NGO sector. In late July, a public call for applications titled "Science, Economy, Society" was announced for financing projects of NGOs.
The strategic goal to which NGO projects contribute is to strengthen the synergy of science, economy and society, especially in the areas defined by the Smart Specialisation Strategy. The priority problems in this area that are planned to be solved by financing these projects are: insufficient connection between the universities and the business sector; insufficient orientation of study programmes to market needs; insufficient number of companies open to the training of young researchers; underdeveloped lifelong learning programmes for business representatives.
Under the scheme, 19 NGOs applied with 19 project proposals. Following the evaluation process, 7 projects were selected, with EUR 48,000 awarded.

Crna Gora
Ministarstvo nauke

ELEKTRONSKI REGISTAR INOVATIVNIH ORGANIZACIJA

ENTRY IN THE REGISTER OF INNOVATIVE ORGANISATIONS
81 ORGANISATIONS REGISTERED SINCE 2018

The Ministry of Science initiated the procedure for entry in the Register of Innovative Organisations on 27 July 2018, in accordance with the Law on Innovative Activity.
Innovative organisations include: scientific research institutions, higher education institutions, centres of excellence and business entities.

So far, 81 organisations have been entered in the Register of Innovative Organisations (48 of them in 2019): 17 scientific research institutions, 62 business entities, 1 innovation and entrepreneurship centre and 1 centre of excellence.

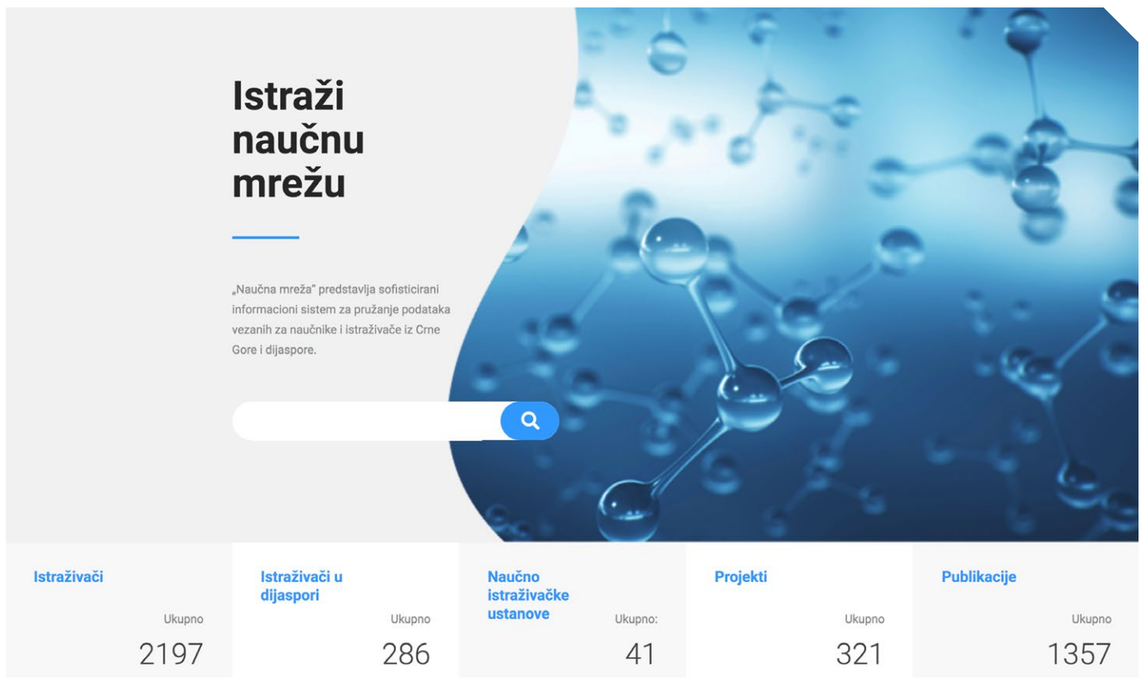
>> MOVING BOUNDARIES IN SCIENCE WITH KNOWLEDGE
300 DIASPORA SCIENTISTS INCLUDED IN THE DATABASE

Cooperation with the scientific diaspora is defined as one of the main goals of the Strategy of Scientific Research Activity. Given the great potential in the Montenegrin scientific diaspora and the fact that it needs to be animated, attracted and involved in the process of strengthening the national research and innovation sector, the Ministry continuously carries out activities to involve the diaspora in the development of Montenegro, as well as to ensure its promotion, as a significant resource, through the following modalities:

- Involvement of renowned experts from the Montenegrin scientific diaspora in the international evaluation of applications for innovative grants (contracts signed in October 2019);
- An initiative to produce a video on diaspora scientists (in preparation);
- Registration in the Science Network. The Ministry keeps records of nearly 300 diaspora scientists.

>> FURTHER DEVELOPMENT OF “SCIENCE NETWORK” INFORMATION SYSTEM
NETWORK LINKS MENTORS AND STUDENTS

Through the HERIC project, the Ministry of Science has upgraded the existing “Science Network” information system, which has been redesigned with new innovation-related functionalities added. Through the Science Network portal, the collaboration of doctoral scholarship candidates and their potential mentors has been enabled, and a database of external evaluators has been formed. In the coming period, the system will receive new functionality related to insights into scientific research equipment at the national level, and two more services related to the cooperation of the academic and business sectors are planned, along with mentoring support for entrepreneurial activities in the area of high technology.



ANA JOKANOVIĆ
Researcher at the Barcelona Supercomputing Centre

Ana Jokanović is a postdoctoral researcher at the Barcelona Supercomputing Centre. She is engaged in the field of resource management in high-performance computers and is currently working on a European project aimed at prototyping a new generation of modular supercomputers. Yet, she indicates, the most important task for her at present is to be sufficiently patient and accessible as a mother of two-year-old Eva.

1. You graduated from the Faculty of Electrical Engineering of the University of Montenegro and went to Spain in 2008. Was it difficult to get used to living in Barcelona?
The very beginning of life in Barcelona was an intense period with many challenges, but I was fortunate enough to share the process of adaptation to Barcelona with a larger group of people from our region, so we supported each other as if we were a family. Now, after having gained experience in other countries and having encountered different cultures, I would say that ending up in Spain was a lucky circumstance as people are much more open and intimate, closer to our mentality.

2. What inspires you in your daily work? Which part of the research do you enjoy the most?
I am inspired by people who are kind, responsible, and dedicated, in science or any other field of work.
Since I am engaged on a large-scale European project with a number of partners, I have to devote a considerable part of my time to coordination, meetings and activities that do not fall directly into the research process. I feel happy when I have a few consecutive days for modelling, experiments and writing without interruption.

3. Has your career at the IBM Research Zurich influenced your career?
At IBM, I met some wonderful and smart people from whom I learned a lot, including, inter alia, about the approach to research, defining hypotheses, communicating the ideas with ease and precision. All this has enabled me to gain a certain kind of security and independence in work.

4. Do you cooperate with your colleagues from Montenegro?
I do cooperate with the Ministry of Science, occasionally delivering on-call lectures. I hope this cooperation will be more intensive in the future.

5. What would you say to young researchers who are at the beginning of their careers?
My message to them would be to be honest and kind people, to read a lot on various topics and to develop general knowledge and culture. Usually, by engaging in science we get specialised in an area, but it is equally important to have a sense of where that area is positioned in relation to the world around us, to social and cultural events. I would also advise them to look for good mentors, both formal and informal, above all good people, because the people with whom we share space and time significantly affect our personal development.

ALEKSANDRA PEROVIĆ

Associate Professor
at University College London

Aleksandra Perović is an Associate Professor at UCL (University College London), at the Division of Psychology and Language Sciences. She graduated in London in 1996 with a major in psychology from the University of Greenwich, obtaining a master's degree in linguistics in 1998 and a doctoral degree in 2004 from UCL. After that, she spent three years in the United States, pursuing postdoctoral studies at the Department of Brain and Cognitive Sciences at the Massachusetts Institute of Technology (MIT).

1. What is the focus of your research?

The field of my work is clinical linguistics / psycholinguistics. I work on atypical language and cognitive development, in children and adults with autism, developmental dysphasia, Down syndrome and Williams syndrome. It is a multidisciplinary field where linguists, psychologists, neuroscientists, speech therapists and physicians work together. The amount of knowledge of the process of typical development that we can get by observing atypical development is fascinating: here we see the role of factors such as different intellectual abilities, memory, learning, as well as environment (monolingual and bilingual) and, of course, biological factors, which largely determine the process of language acquisition in both typical and atypical populations.

In the last few years I have been engaged in awareness-raising with regard to Williams syndrome, a rare genetic syndrome accompanied by specific health problems and a very specific cognitive and linguistic profile. I helped my colleagues from the University of Novi Sad and educators from the "Dr Milan Petrović" Special School from Novi Sad in establishing the Williams Syndrome Association in the Balkans. Our members are families of children and adults with Williams syndrome from Serbia, Montenegro, Bosnia and Herzegovina and Croatia, to whom we provide information in relation to any problems that accompany this syndrome.

2. Do you cooperate with the researchers/scientists from Montenegro?

I have been working to establish contacts with scientists and researchers in Montenegro for several years now and I hope that something concrete will arise as a result. A group of European scientists, together with me, just submitted a grant application for a multidisciplinary European project in which I included scientists from the University of Montenegro, as well as experts in the fields of medicine, social work and NGOs in Montenegro. If we receive funding, we plan to organise one of the annual conferences of the project in Montenegro. European researchers in my field of activity are interested in collaborating with our scientists, so I hope that we will enable further development of Montenegrin research staff at European universities, while enhancing research work in Montenegro.

My next step is to establish a Williams Syndrome Association in Montenegro, to provide information for parents, health professionals and educators, as well as financial resources, in order for members of the Montenegrin Association to participate in annual activities organised by the Federation of European Williams Syndrome Associations (FEWS).

3. What would you say to the future generations of researchers/scientists?

Improve your written English and written communication – this is a must for publishing in prestigious scientific journals. Contact overseas scientists if you are interested in their work – they will respond, send you their articles, and maybe offer you some work experience. Try to visit student summer schools that are organised in different scientific disciplines and for which there are often scholarships that will cover the travel costs for Balkan students. Be innovative, courageous, open to new experiences, ready to learn and work even without remuneration if this is necessary to prove yourself.

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