

# Analytical Study of Montenegrin Diaspora

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## Executive Summary

Similar to many other countries worldwide, Montenegro has suffered from a brain drain problem in recent decades. There are indications that experts who left the country account for significant human potential; however, neither systematic analysis of this population nor organized networking event has so far taken place. To that end, this Study examines available data to assess the plausibility of scientific Diaspora's involvement in innovation processes inside Montenegro. This is achieved through an analysis of Diaspora's potential, as well as of Montenegro's legal and institutional framework, current policies and initiatives regarding expatriate scientific community, and available financing instruments for collaboration. The Study's primary aim is to lay ground for upcoming networking events and for closer partnerships between domestic institutions and Montenegrin researchers abroad.

Given previously published interviews and reports, it is likely that expatriate research community would be willing to help with Montenegro's innovation processes. However, since no systematic survey has thus far been conducted on this topic, it is necessary to assess how active this interest actually is, as well as how a possible involvement would be perceived by stakeholders in Montenegro. On the basis of analysis presented in the Study, it is advised that efforts be directed towards expatriates' temporary and virtual involvement rather than permanent return.

A more coordinated effort from Montenegro's institutions towards the Diaspora needs to take place, however the domain of scientific collaboration can be separate from general Diaspora issues. Specifically, cooperation activities in this domain could be governed by an expert team assembled by the Ministry of Science. Due to its involvement in other innovation processes in the country, this Ministry can optimally utilize scientific Diaspora's human potential.

In general, initial steps in strengthening collaboration with Montenegro's scientific Diaspora have been made in the right direction: multiple policy documents exist which are in accordance with EU strategies and Diaspora's potential role in the country's development processes has been recognized. However, much remains to be done as activities in this domain are still at the beginning. Specifically, strategies laid out in policy documents have to be made operational. Moreover, administrative capacity of bodies implementing those strategies may pose an issue. Finally, concrete measures have to be defined and put to practice in order to prevent further brain drain and use global brain circulation trends to the country's full advantage.

## Introduction and context

In past decades, many countries worldwide have experienced the consequences of a brain drain phenomenon. The republics of Former Yugoslavia, affected by the country's dissolution and the civil wars in the 1990s, have seen intensive migrations outside of their borders, naturally also including the highly skilled individuals. In fact, according to the UNESCO report "Science, Technology and Economic Development in South-Eastern Europe", some countries in the Western Balkan region have lost almost 70% of their skilled professionals due to emigration [UNESCO2005].

Montenegro is no exception in this regard. Nevertheless, exact figures on expatriate scientists are not available, nor has the country thus far systematically addressed the brain drain issue. The SWOT analysis within Strategy of Science and Research Activities of Montenegro (2012-2016) identifies insufficient cooperation with Diaspora as a weakness, and strengthening of such cooperation as an opportunity [MMOS2012]. Under the assumption that knowledge economy represents the only sensible development route for a country, and that the scientific elite - both inside the country as well as abroad - is essential for its successful implementation, this Study analyzes the available data to identify the human potential of Montenegro's scientific Diaspora.

A related study on Bosnia and Herzegovina outlines the usual Diaspora strategy process [ACIPS2010]: "Most of the actions in tackling the brain drain present themselves in three major cluster schemes. The first is fore mostly identifying where one's Diaspora strengths lie [...]; secondly the turn towards establishment of research institutions and heavier investment in research development and science sector [...]; and finally the policies aiming to facilitate return and easy re-acculturation of expatriates back at home."

This Study fits into the first scheme. It is conducted under Government of Montenegro's five-year project entitled "Higher Education and Research for Innovation and Competitiveness" (HERIC). As network of Montenegro's scientific Diaspora is currently developed only at a rather rudimentary level, an analysis of its geographic distribution and expertise areas represents a foundation for the country's Diaspora strategy implementation. Within such a strategy, the identified highly-educated expatriates could then more easily be included into the national development schemes.

## Objectives and scope

Brain drain phenomenon has been the subject of various international studies in previous decades. Most relevant aspects analyzed in such studies can be grouped into four different clusters:

*Motivation to go abroad.* Here, two types of factors are being distinguished. *Push factors* are generally referring to reasons for leaving the home country. On the other hand, *pull factors* are associated with reasons for choosing the destination country.

*Collaboration initiators.* Engagement of scientific Diaspora has traditionally been initiated by two different sides. *Bottom-up* processes refer to informal networks and initiatives which are led by members of the scientific Diaspora itself, to be eventually recognized and embraced by the home governments. *Top-down* approaches denote those processes where governments have been the initiators, acknowledging the brain drain problem and devising strategies for reversing it.

*National strategy.* Whereas initially, countries have tried to reverse their brain drains and stimulate the return of expatriates, more recent strategies accept globalization dynamics and address what has been denoted as *brain circulation*. Here, temporary migration waves are being stimulated, under the assumption that obtained know-how will inevitably be transferred to the home country.

*Reception.* This set of subjects deals first with the perception of Diaspora and its reintegration by the domicile population. Then, measures for facilitating return, as well as issues relating to expatriates' adaptation to the new environments, are being studied.

Although the above aspects are very important in any context concerning Diaspora, they are addressed by our Study mostly implicitly. Instead, the Study's focus is mainly on concrete measures for establishing the foundation for an active involvement of Montenegrin scientific Diaspora into development processes back home. Specifically, the Study's main objectives are:

1. Establishing a comprehensive database of Montenegrin scientists abroad. This database should be in an adequate format to allow seamless addition of new information over time, thus becoming a live record of the scientific expatriate population.
2. Thoroughly analyzing the identified population, with the aim of identifying its strengths. The analysis should, subject to available data, consider several factors such as geographic distribution, demographics, expertise areas, level of scientific involvement in the destination country and Montenegro, etc.
3. Identifying opportunities for collaboration between, on the one side, established Montenegrin scientists abroad, and on the other, the research community in Montenegro. This includes existing legal and institutional framework in Montenegro, similar previous initiatives, as well as financing programs available for collaboration.
4. Analysis of best practices in other countries for engaging the scientific Diaspora and for enabling active scientific collaboration. Many countries have previously dealt with the brain drain phenomenon, and countries in the region, which share recent history with Montenegro, represent a closer example.
5. Preparing a solid foundation for the envisioned congress of Montenegrin scientific Diaspora, laying out the first formal network of this population. The congress would be organized shortly after finalization of the Study and could rely on its results in planning of networking activities and discussions.

## Montenegrin Diaspora

Although Montenegro's population is relatively small (cca. 630 000), informal sources suggest that approximately an equal number of people lives outside the country. The exact number is difficult to estimate due to several factors: irregular registration patterns and records, assimilation with native population in the destination country, and most importantly, the fact that former Yugoslavian

countries (e.g. Serbia or Croatia) are often not considered as foreign ones by the immigrants while boasting significant numbers of Montenegrin emigrants.

Throughout history, emigration from Montenegro occurred in several waves. However, for the purpose of this document, only migrations in the 2<sup>nd</sup> part of the 20<sup>th</sup> century, which would cover active scientists, are considered.

A recent internal report from the Montenegrin Diaspora Administration notes the relevance of incorporating this population into the country's development [Bekteši2012]: "Taking advantage of globalization trends and rationally laid out diplomatic networks, a foundation should be made for engaging competent members of Montenegrin Diaspora which would be in mutual interest for the country and its citizens abroad. [...] Managing this (human and intellectual) potential is an essential condition for further progress and development of Montenegro."

Whereas in earlier periods, other Yugoslavian republics (now independent countries) were the most common destination for people from Montenegro, in the later years of the 20<sup>th</sup> century it is mostly Western European and North American countries that attract Montenegrin émigrés. The census from 1981 notes 105 thousand immigrants from Montenegro in other Yugoslavian republics, 70 thousand of which (i.e. two thirds) were residing in Serbia. On the other hand, the 1991 census indicates approximately 24 thousand people from Montenegro who reside abroad (note that in this year, other Yugoslavian republics are not yet counted as foreign) [Bekteši2012]. Turbulent years at the end of the 20<sup>th</sup> century, including some former Yugoslavian republics suddenly becoming foreign countries (i.e. Slovenia, Croatia and Bosnia and Herzegovina), change this picture dramatically, as shown in Table 1.

Table 1: Montenegrin citizens living or working abroad.

Census	Population			
	Total	In Montenegro	Abroad (excluding former Yugoslavia)	
			In numbers	Percentage of total
1991	615,035	591,269	23,766	3.9
2003	687,418	631,695	55,723	8.1

*Source: Demographic trends in Montenegro in the 2nd part of the 20th century and forecasts until 2050, Bureau of Statistics of Montenegro, Podgorica 2008.*

According to the 2003 census, 2,605 of the people living abroad (6.2%) possesses a university diploma (Table 2). More than half of this number (50.9%) lives and works in European countries, whereas 43.5% resides in non-European ones (for the remaining 5.6% the destination country is unknown). About a third of the whole number (32.6%) has emigrated to the United States, 10.9% to Germany, 5.1% to Canada and 4.1% to United Kingdom.

Table 2 does not consider former Yugoslavian countries, although they are a destination for large numbers of Montenegrin citizens. Previously noted reports state that Montenegro's independence in 2006 made Serbia the host of the largest Montenegrin Diaspora. This population is quite diverse in



terms of education and level of integration. Same is true for those residing in Bosnia and Herzegovina. On the other hand, what characterizes the Diaspora in Croatia is relatively high education and high involvement in socio-political (as well as scientific) developments in the country.

Table 2: Montenegrin citizens abroad with a higher education level, according to destination country (2003 census).

Destination country	Total (older than 15 years of age)	College education		University education	
		In numbers	Percentage	In numbers	Percentage
<b>All together</b>	<b>42,099</b>	<b>1,618</b>	<b>3.8%</b>	<b>2,605</b>	<b>6.2%</b>
USA	14,927	418	2.8%	850	5.7%
Germany	9,100	279	3.1%	284	3.1%
Switzerland	2,101	73	3.5%	87	4.1%
Luxembourg	1,933	46	2.4%	33	1.7%
Sweden	1,702	55	3.2%	89	5.2%
France	1,062	47	4.4%	84	7.9%
Italy	1,000	109	10.9%	76	7.6%
Denmark	900	36	4.0%	26	2.9%
The Netherlands	873	25	2.9%	41	4.7%
Belgium	388	9	2.3%	15	3.9%
United Kingdom	364	36	9.9%	108	29.7%
Other European countries	3,041	199	6.5%	376	12.4%
Australia	833	44	5.3%	73	8.8%
Austria	711	31	4.4%	36	5.1%
Canada	565	40	7.1%	132	23.4%
Russian federation	466	24	5.2%	71	15.2%
Other non-European countries	455	50	11.0%	79	17.4%
Unknown	1,678	97	5.8%	145	8.6%

Source: *Statistical yearly*, Podgorica, Bureau of statistics, 2011.

## Scientific Diaspora

Exact figures about scientists living and working outside of Montenegro are unavailable. Prof. Sreten Škuletić, at the time National coordinator for cooperation with UNESCO in Montenegro, stated in 2004 that about 100 young experts had left the University of Montenegro between 1990 and 1998 in search for opportunities abroad [Šofranac2004]. The figure accounted for almost 20% of the University staff at the time.

Over the course of 6 years (2004-2010), Mr. Dragan Batrićević from the Montenegrin educational journal *Prosvjetni rad* (Educational work) conducted interviews with members of the scientific Diaspora. These interviews present a carefully crafted selection of scientific profiles as well as a valuable source of information about the scientists' professional needs and motivations. In fact, since no systematic analysis or survey of scientific Diaspora has so far taken place, they represent the only source of such information, albeit from a relatively small population sample (i.e. 44 scientists).

Without discussing these interviews at great length, we limit ourselves to mentioning a few key patterns that emerge from the texts:

- Among the “push factors”, most people mentioned: socio-economic reasons; lack of job opportunities or awareness of science's role in the society; and lack of necessary equipment and infrastructure for advanced scientific research.
- Most scientists note the importance of collaboration between academia on one, and industry and business on the other side, resulting in (large-scale) industrial projects, modern scientific equipment and science's applicability in practice.
- All of the scientists interviewed express readiness to engage with and help the research community in Montenegro, and some do so with concrete proposals.

Findings summarized above fit with those from other countries that previously dealt with the brain drain problem (many are presented in [ACIPS2010]). Addressing the mentioned issues presents a known challenge, but experience of other countries helps in identifying the best practices for solving them.

In general, due to migration dynamics in Montenegro's recent history, its Diaspora can generally be grouped into 3 distinct clusters:

- 1. Ex-Yu.** Former Yugoslavian countries (i.e. before 1990s, more developed republics of the same country) represented a natural destination for Montenegro's scientists in the period 1950-1990. As a consequence, these countries, and especially Serbia and Croatia, hold a somewhat older, but more established, scientific population. These scientists are generally very well integrated into the receiving countries. In Croatia, they are often members of a well organized Diaspora club.
- 2. EU.** Countries of European Union received increasing numbers of Montenegro's scientists after 1990. In addition to having spent less time in new destinations, the atomized structure of European Union usually means that these scientists may be well integrated, but operate individually and informally.

3. **Non-EU.** Countries outside of Europe, primarily the United States, also hold large numbers of Montenegrin scientists since 1990. Given the development level of technology infrastructure in the US and Canada, fields of expertise of these scientists are usually within the technical sciences.

## Statistical analysis

### *Data sources and selection criteria*

All the data at our disposal was thoroughly checked for its validity. In addition, due to its manageable size, we verified every single entry manually before arriving at the final set. The selection criteria we used in this process are as follows:

- **Sources.** We have merged, combined and placed in a standardized format entries from multiple sources:
  - o Internet portal *Naučna mreža* (Scientific network), created by the Montenegrin Ministry of Science: this gave about 105 entries;
  - o Database of researchers abroad, compiled by Diaspora Administration, under the Montenegrin Ministry of Foreign Affairs: about 60 additional entries;
  - o List of scientists interviewed for the Montenegrin journal *Prosvjetni rad* (Educational work), compiled by Mr. Dragan Batrićević: about 20 additional entries;
  - o Other lists from representatives of HERIC and Ministry of Science: about 20 additional entries; and
  - o Author's individual contacts and network: about 30 additional entries.

As Montenegro is a country with likely only one degree of separation between its nationals, we assumed that combining several databases, as well as input from some trusted personal contacts, would lead to a relatively complete set.

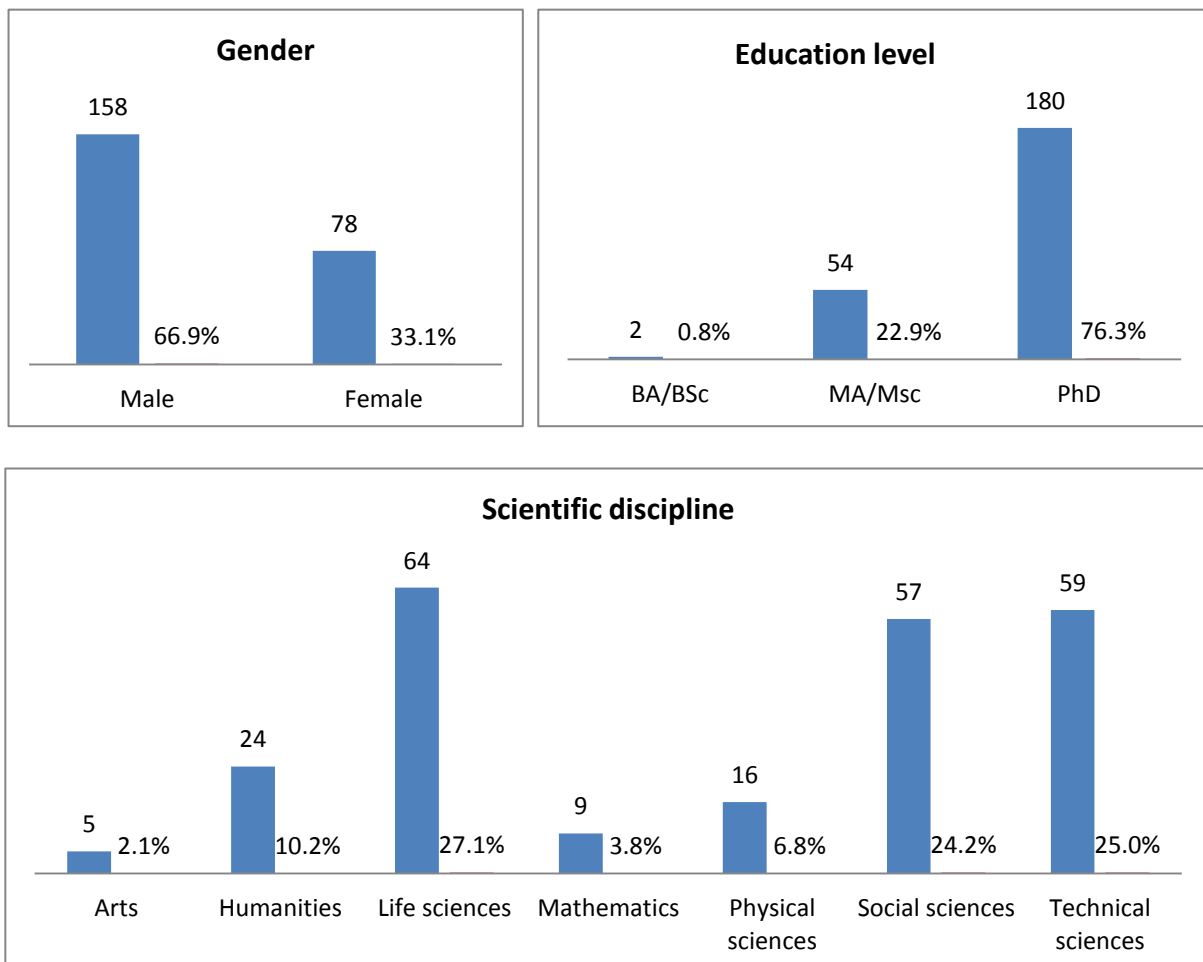
- **National identity.** In the Study, we placed a firm emphasis on science rather than on the national origin, as the question of identity is within the realm of feelings and personal choices. As a consequence, beside the input databases which had been verified for this criterion before, we have only added people who have either been born in Montenegro, have a Montenegrin citizenship or have openly declared themselves as members of the Montenegrin Diaspora. In all other cases, we have asked the individuals personally, and added them to the database if they agreed.
- **Academic degree.** Only a Doctor of Philosophy (PhD) degree and one of the Master's degrees (e.g. MSc, MA or MD) were considered for the Study. Some of the input databases contained practicing engineers or similar professions with only a BSc degree, but they were not included here for reasons of consistency.

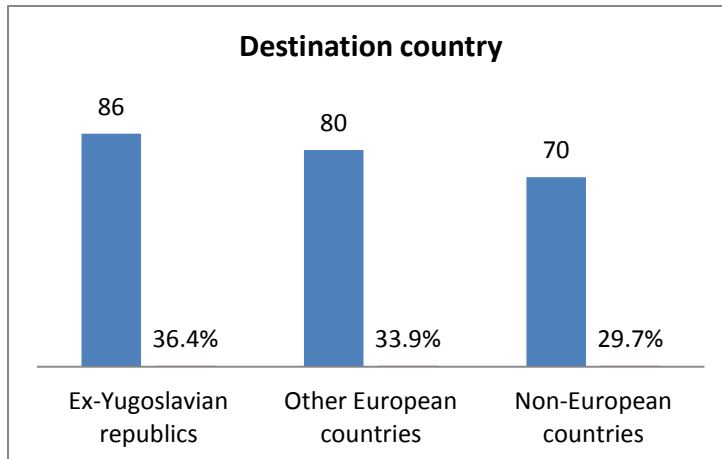
- **Profession.** We have limited the scope of the Study only to the sciences - physical as well as social ones. All other professions were included only in case an individual had obtained an academic degree as described above, making him or her eligible for scientific research. This left out a significant number of established BSc-level individuals in areas such as engineering, investment banking etc., which could be subject of a separate study.
- **Exceptions.** Some exceptions to the above rules were made in case a person does not have an academic degree higher than e.g. BSc but performs a function that is scientific in nature. Examples include a Senior Data Scientist at PayPal, a Research Analyst at the International Monetary Fund, etc.

### Main findings

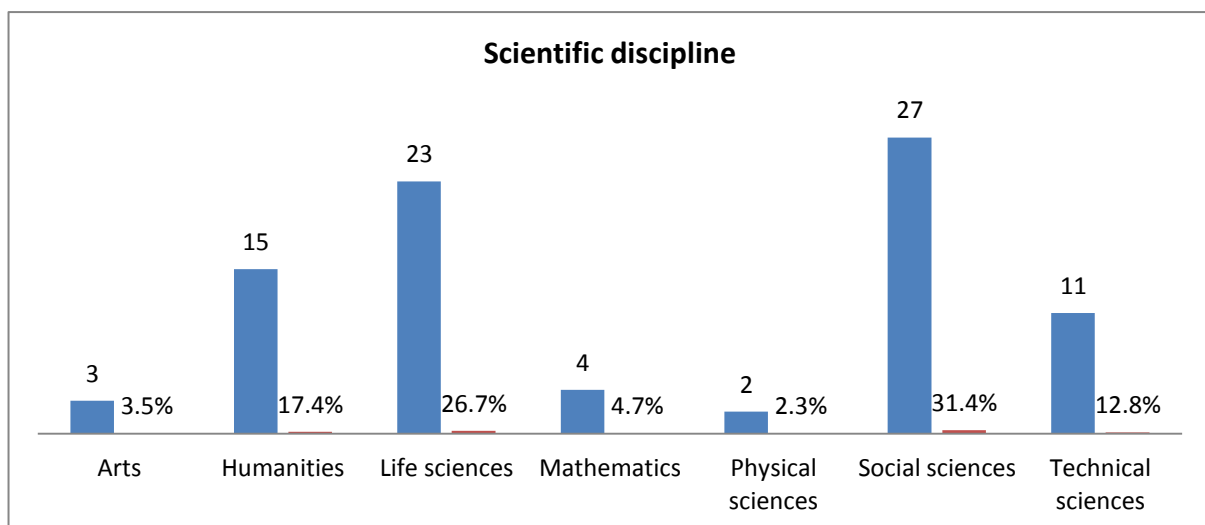
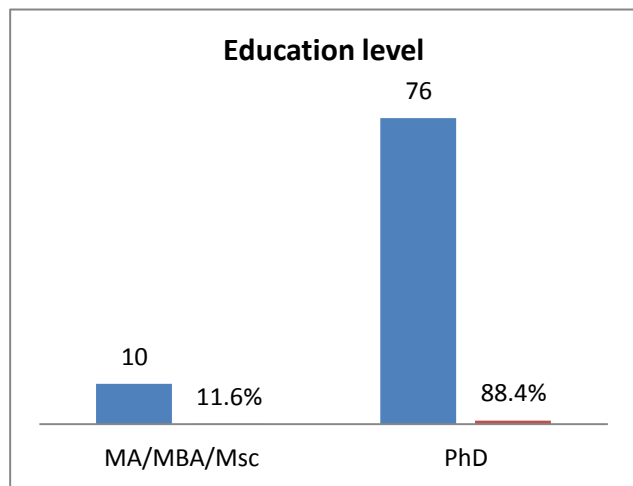
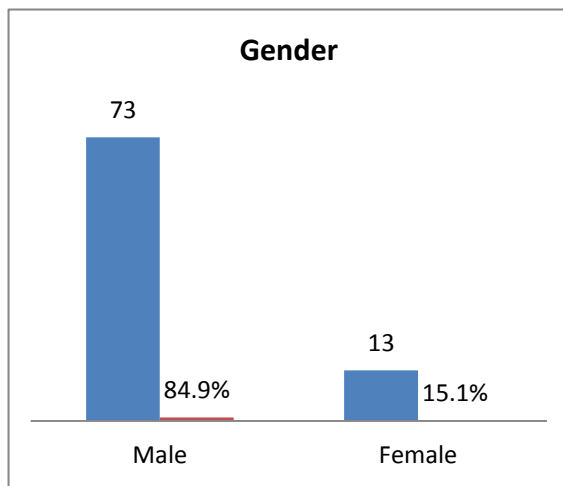
Here, we present aggregate data on Montenegrin scientific Diaspora in terms of gender, destination region (i.e. one of the three specified above), education level and area of expertise. As data on age structure of scientists is largely unavailable, we could not include it in the analysis. For a more detailed overview, the same information is presented for each destination region as well.

#### Global overview

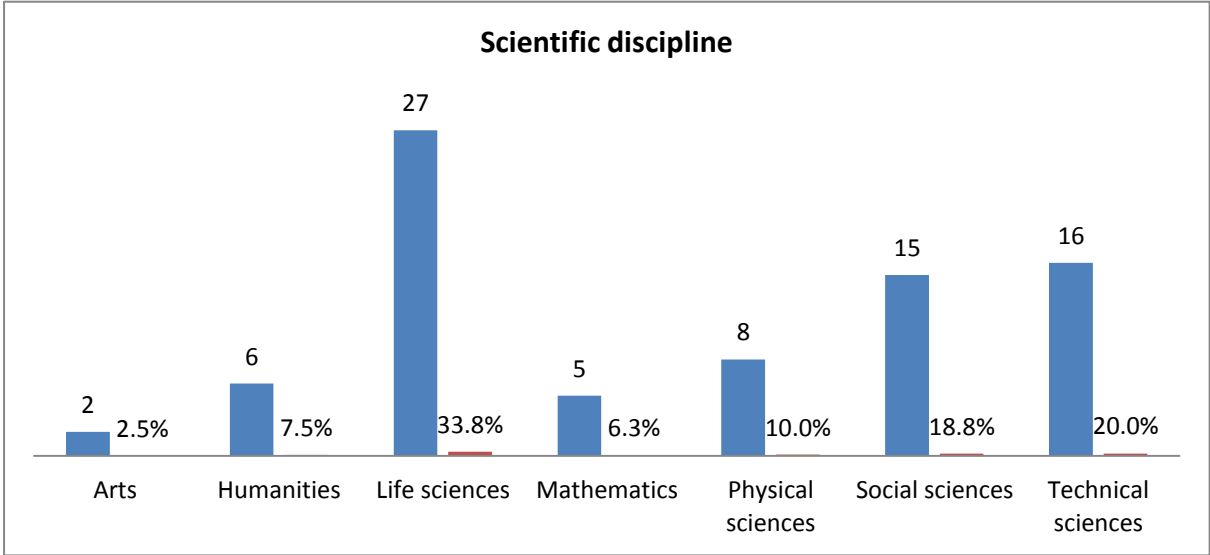
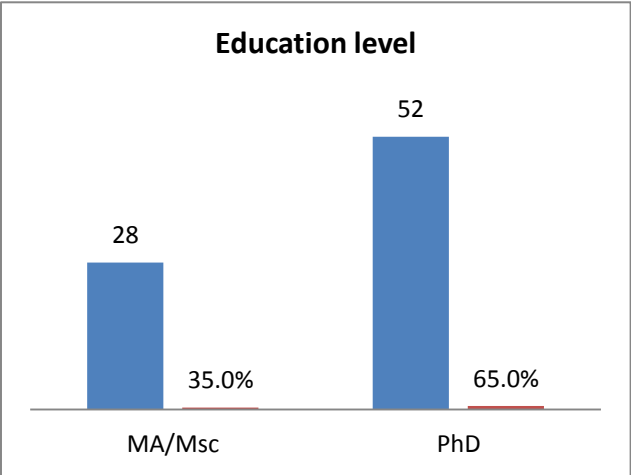
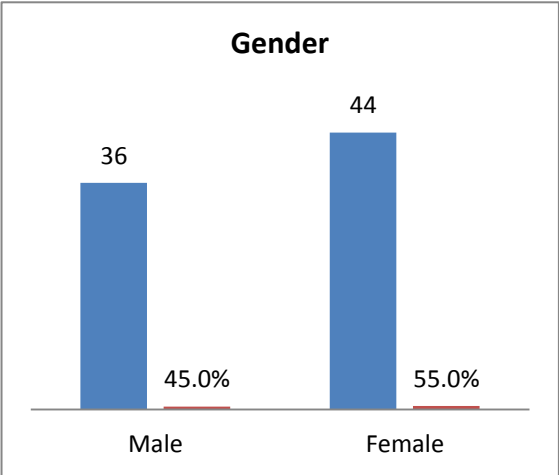




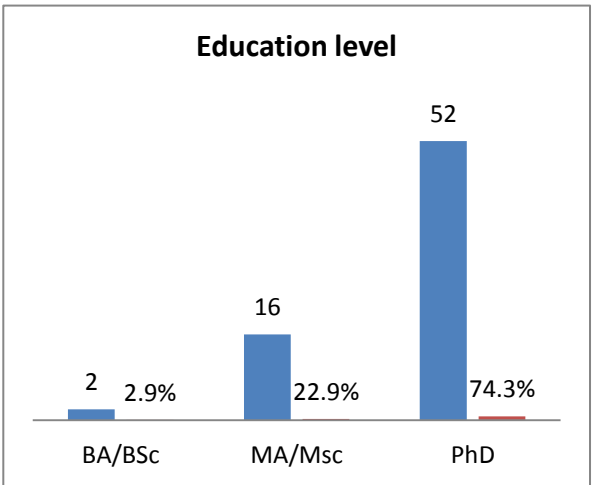
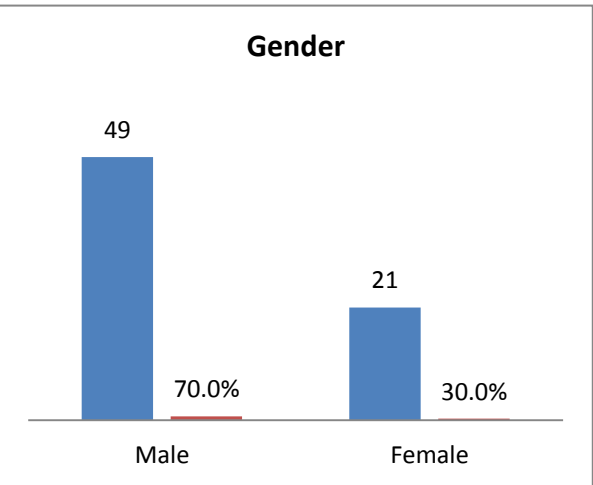
### Former Yugoslavian countries

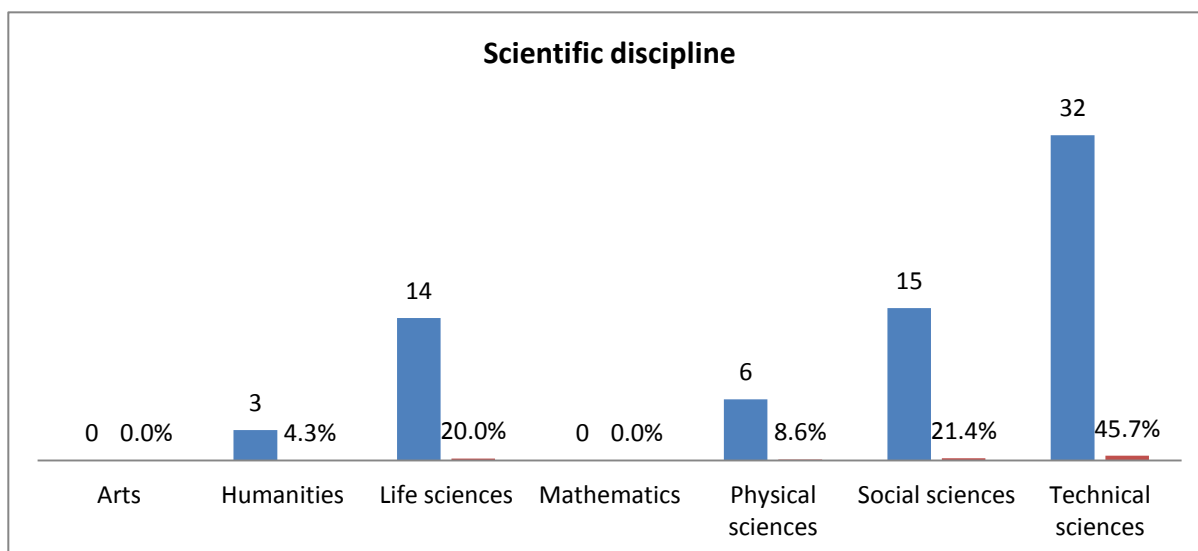


European countries (EU)



Non-European countries





As can be seen from the graphs, expatriate male scientists dominate globally in numbers over their female counterparts. This trend is very prominent in case of former Yugoslavian countries and the non-European region, where the ratio is approximately 70 to 30 percent. However, in case of EU countries, the trend is somewhat reversed, with female scientists accounting for 55% of the population.

Most of the scientists considered hold a PhD degree, especially in former Yugoslavian region. With respect to scientific disciplines, social and life sciences dominate in the former Yugoslavian countries (58.1%), life sciences in EU countries (33.8%) and technical sciences in non-European countries (45.7%).

Although exact data on age is not available, experience from preparing this Study suggests that scientific Diaspora population in the rest of the Balkan region is the oldest one, while also being integrated best into its destination countries; population in non-European countries is a younger one (i.e. people in their thirties and forties), whereas the one in EU countries is likely the youngest one, with constant influx of new scientists.

## Legal framework

Scientific developments in Montenegro are currently governed by the *Law on Scientific and Research Activities* (from 2010) and *Amendments to the Strategy on Scientific Research Activities (2012-2016)* document (from 2012), which have been defined in accordance with the *Europe2020* strategy.

In 2010, the Government of Montenegro has approved *A strategy for collaboration with Diaspora*, which planned a separate law that would govern activities in this domain. Nevertheless, in 2014 only a draft version of this law is available, which still has to be passed by the parliament.

The draft law defines collaboration domains and measures to make such collaboration more active. It envisions a separate Advisory Body which would help with drafting strategies and whose members would include Diaspora representatives, as well as those from Montenegrin ministries and other institutions [GOM2010].

With respect to educational and scientific collaboration, the draft law envisions exchange programs for students and scholars, as well as measures for enabling expatriate students to enroll at Montenegrin universities. Measures relating to the brain drain phenomenon are defined in general terms by a single section within article 23.

Nevertheless, for effective research collaboration with Diaspora, a specific law may not be necessary, as shown by the example of Croatia. Namely, Croatia did not have a law governing Diaspora-related activities until late 2011, but instead implemented such activities through existing innovation and science&technology policies [Pozzi2011]. Croatian experience, and especially the successful initiatives governed by *Unity through Knowledge Fund* (UKF) since 2007, demonstrate that general legal framework in the country, as well as direct linking of Diaspora's human potential to critical domestic problems, may be more important factors for optimal involvement of scientific Diaspora in their native country. Following the Croatian example, it is worth considering a structure in which management of research collaboration would be performed by an independent body, rather than the one concerned with general Diaspora questions.

At this time, no reforms have been considered in immigration legislation (e.g. special visas for researchers) either for European region or the non-European countries, to ease mobility of scientists.

With respect to other laws which might play a role in involving Diaspora in domestic developments, the Nationality Law is particularly important. Namely, according to the current law, a Montenegrin citizen which obtains a citizenship of another country automatically loses the Montenegrin one, unless otherwise specified by a bilateral agreement between the countries. Although this rule is not always respected in practice, if applied, it may be an obstacle to possible return and reintegration of many expatriate scientists, which would thus be treated as foreigners. Article 12 of the Nationality Law allows exceptions for citizens with special merits to Montenegro, which can include scientists. However, this rule has been applied in very few cases as the Ministry of Internal Affairs is following the said law rather strictly.

A similar issue is pointed out in [CEDEM2011]. Namely, those who have, after graduating, worked for more than one year abroad are subjected to the rule which prevents them from taking a state exam. This in turn makes it impossible for those returnees to apply for public administration jobs.

For a facilitated and effective Diaspora involvement, a more coordinated legislative effort would be preferred.

## **Institutional framework**

At the moment, few institutional instruments exist for collaboration with Diaspora. Within the domestic research community, neither Montenegro's universities (i.e. 56 accredited institutions) nor its *Academy of Arts and Sciences* (CANU) currently have programs in this area, although some collaboration involving the Diaspora is being realized through e.g. visiting professorships.

For strengthening links with Diaspora in general, Government of Montenegro has, in 2002, founded a *Center for emigrants*, which operated under the Ministry of Foreign Affairs. In 2011, the center has been transformed into a separate *Diaspora Administration*, with an ambition of becoming an official link between Montenegro and its Diaspora. As the Administration operates within the Ministry of Foreign Affairs and European Integration, this is realized by coordinating information from



Montenegro's Diplomatic and Consular departments. The Administration's mission is to pay special attention to the country's expatriate population in order to improve cultural, educational, industry and sport links between the two. With the transformation, the Diaspora Administration was supposed to grow to 11 people, with a budget equivalent to 0.05% of Montenegrin national budget. However, at the moment, only 5 people are working for this institution, which operates under a limited budget, about 7 times smaller than planned. Regardless of efficiency and professionalism of Administration employees, collaboration with Diaspora, especially considering the ambitious aim of improving country's economic development, is unlikely to produce substantial results unless supported by more resources, both in terms of manpower and finances.

Within the domain of scientific collaboration, Government of Montenegro is currently implementing *Higher Education and Research for Innovation and Competitiveness* (HERIC) Project. The project is financed by a World Bank loan amounting to EUR 12 million and is planned to run for 5 years (2012-2017). Its objective is to strengthen the quality and relevance of higher education and research in Montenegro through necessary reforms and strengthening of R&D capabilities. Ministry of Science and Ministry of Education are the main agencies implementing HERIC; the Project Management Team (PMT) is headed by the Deputy Minister of Science and comprises seven members in total, whereas the steering committee numbers thirteen people.

Under the HERIC project component 2 (*Human Capital Development through Internationalization Initiatives*), subcomponent 3 (*Technical Assistance to Support Internationalization Initiatives*) includes two specific activities related to scientific Diaspora. The first activity refers to this Study. The second one describes a conference, which would bring together Diaspora members and representatives of relevant Montenegrin institutions, to "discuss cooperation opportunities and more specific areas and modalities of cooperation between the Diaspora and domestic research community". Employees of the mentioned ministries perform HERIC-related activities as part of their daily job; however, since the PMT involves several contractors and Diaspora Administration also takes part in this subcomponent, the project work is well organized, albeit somewhat delayed relative to the planned time schedule.

Ministry of Science is the principal administrative body responsible for planning, funding and monitoring of the entire science system in Montenegro. It has been created in December 2010, being previously organized as a department within Ministry of Education and Science. Within HERIC, this Ministry implements several internationalization activities. It also has a primary role in projects such as Centers of Excellence (the first one of which launched in 2014) and the planned Science and Technology Park.

In general, however, administrative capacity presents an issue in case of Montenegro. A recent European Commission document states that "lack of administrative capacity and fragmentation still impede policy implementation at times, thus negatively affecting competitiveness [...] there is a wide fragmentation of strategies adopted and limited administrative capacity for their implementation" [IPA2014].

## Previous initiatives involving scientific Diaspora

So far, the potential of Montenegrin scientific Diaspora has not been explored sufficiently and a comprehensive analysis of issues concerning this population not performed yet. Most programs up to date have been initiated or financed by international organizations or NGOs. Some other cooperation activities took place through personal networks as well as informal collaboration via previously established connections. As a consequence, no organized networking activity has occurred yet.

Some initiatives have previously taken place which, in one way or another, involved the scientific Diaspora:

- *World University Service (WUS)* Austria has been an active player in promoting brain gain activities in the region of former Yugoslavia. Their *Brain Gain Program (BGP)* is aimed at temporarily bringing expatriate scientists back to their home region through guest lectures, participation in R&D projects or mentoring of student theses. Between 2002 and 2011, WUS has engaged 33 Montenegrin scientists through BGP, with some success [WUS2011-1].
- Since its inception in 2010, the Montenegrin *Ministry of Science* has initiated several small-scale programs for collaboration with scientific Diaspora. Since 2011, it has organized the *Open Science Days* festival and the *Researchers' Night* event, and for this purpose brought expatriate scientists for panel discussions and presentations in Montenegro. In addition, in 2010 and 2011, it had a program for stimulating collaboration with expatriate scientists. The Ministry dedicated a small budget for this purpose, allowing for 10 individual visits per year, which had to be initiated by a domestic research institution. However, during the two years, this instrument was only used in a single case.
- Montenegrin NGO *Centre for Democracy and Human Rights (CEDEM)* was involved in several activities regarding Diaspora, including a policy paper and a round table on reintegration of highly skilled expatriates [CEDEM2011]. These activities were part of a regional project, "Advocating for "Brain Gain" policies aimed at reintegration of the high-skilled returnees in the countries of Western Balkans", which included an online questionnaire for expatriate scientists. However, findings from Montenegro are not available in questionnaire results.
- The *Organization of Montenegrin Students Abroad (OMSA)* is an active group numbering more than 1800 members, with insights into the mobility patterns of Montenegrin students abroad. This group has also taken part in the Open Science Days festival.

In comparison with neighboring countries, Montenegro is lagging behind when it comes to implementing programs regarding Diaspora. In a recent case study of brain drain policies in the Western Balkans [Pavlov2014], authors mention a single such initiative in Montenegro (namely the Strategy for collaboration with Diaspora, mentioned above) as opposed to two in Macedonia, seven in Serbia and eight in Bosnia and Herzegovina (already a member of the EU, Croatia was not considered in this analysis).

With respect to mobility, joint research projects and bilateral agreements with other countries (thirteen, as of August 2014) have been set up recently. In January 2010, Montenegro joined the *Euraxess - Researchers in Motion* initiative which promotes mobility within EU. Universities in

Montenegro have created visiting professor positions, which offer the possibility of appointing members of the scientific Diaspora [WB2013]. However, although mobility of researchers is being facilitated, there is a lack of policies aimed at preventing further brain drain. In its latest *Strategy of Science and Research Activities of Montenegro (2012-2016)*, the Ministry of Science includes programs for Montenegrin PhD students and researchers to spend time abroad. However, the strategy does not define measures for encouraging or facilitating reintegration of this population, thus not effectively contributing to the brain gain. A similar conclusion is drawn in [CEDEM2011] with respect to student exchange programs, noting that a clause demanding student's return exists, but is rarely respected in practice. The new HERIC scholarship scheme [HERIC2014] outlines several mobility opportunities conditioned upon the scholar's return to Montenegro. In addition to defining such schemes in policy documents, it is essential that they are enabled at an operational level in order to ensure their implementation in practice.

Finally, there is a question of Diaspora reception. Currently, no information is available about the perception of this population, and its possible return to Montenegro, back at home. In order to involve the scientific Diaspora in domestic development programs, an awareness among the general public about this population's possible contribution is important. For example, if reintegration would involve job quotas for Diaspora, it is necessary to analyze beforehand which consequences this would have, given the already high unemployment rate in Montenegro (20% average since 2009).

## Available financing programs

Beside the abovementioned instruments created by the Ministry of Science to enhance researchers' mobility, multiple international financing programs are available. Among those, European funds play an important role, especially since many are designed to facilitate cross-border cooperation. We present the most prominent examples of such funds below. However, given that about 30% of the Montenegrin expatriate scientists reside in non-European countries, other sources of research funding should be sought in those cases. Specifically, industrial projects should be considered, which could perhaps be implemented with less resources in Montenegro than in e.g. the United States.

- **IPA.** Montenegro has been receiving financial assistance from the EU since 1998. EU *CARDS* assistance, amounting to EUR 277.2 million, has in 2007 been replaced by the *Instrument for Pre-Accession Assistance (IPA)*, whose purpose is to help candidate countries to progress towards fully meeting the political and economic criteria of the EU. IPA was running from 2007-2013, and will be replaced by IPA II program for the period 2014-2020.

Implementation of the first IPA phase, in addition to only being available through two of the five components, was planned by the *Multi-annual Indicative Financial Framework (MIFF)*, whose priorities, in case of Montenegro, have not included assistance in areas of education or innovation developments (instead, they have focused on general political and economic aspects). Therefore, there was little opportunity for utilizing these funds for collaboration with the scientific Diaspora.

Within IPA II, one of the two main focus areas for Montenegro is *Competitiveness and Growth*, which includes human resources development, improving the business environment for small and medium enterprises (SMEs), addressing skills gaps and mismatches between the labor market and the education system, etc. [IPA2014]. Contrary to IPA I, which relied on

a project-based scheme, IPA II will be implemented through a sector-based approach. Two sectors relevant for this Study are *Competitiveness and Innovation* and *Education, employment and social policies* (there is also a *Regional cooperation and territorial cooperation* sector, which could be utilized for collaboration with Diaspora from Former Yugoslavian countries). Under *Competitiveness and Innovation*, IPA II assistance (amounting to EUR 21.2 million) will be provided for improving the environment for SMEs, entrepreneurship and start-ups. Within the *Education, employment and social policies* sector (EUR 28.1 million in total), investments in human resources, as well as modernization of educational and research systems is planned. Therefore, there is sufficient room for financing programs which would involve cooperation with Montenegrin scientists in other EU or EU-candidate countries.

Although IPA II may also be utilized for access to instruments such as *Technical Assistance and Information Exchange* (TAIEX), this fund does not include options for collaboration with the Diaspora.

- **Horizon 2020.** Horizon 2020 is the successor of the 7<sup>th</sup> *Framework Programme for Research and Technological Development* (FP7), an EU instrument that lasted from 2007 to 2013. Within FP7, Montenegro has utilized several programs relevant for this Study; for example, the mentioned interviews with the scientific Diaspora for *Prosvjetni rad*, as well as festival *Open Science Days* and *Researchers' Night*, were made with help from the FP7 program. In Montenegro, FP7 was governed by a network of *National Contact Points* (NCP), which included members of the Ministry of Science, University of Montenegro, the governmental *Administration for International Co-operation of Montenegro* (ZAMTES) and the *Directorate for SME Development* (NASME).

Similar to FP7, Horizon 2020 is available to EU candidate countries for R&D projects, in the period 2014-2020. Montenegro has signed the memorandum on accession to this fund on July 1, 2014. The NCP for the Horizon 2020 program comprises 22 members, though mostly from the ministries and universities, and one representative of NASME (the mentioned ZAMTES agency has since been dismantled and its members have joined the ministries of Science and Economy). The funds available to Horizon 2020 members amount to EUR 77 billion, and will mostly be awarded in accordance with the *Europe2020* strategy, aimed at Europe's global competitiveness and innovation. Many of the sections within this program could be utilized for scientific collaboration with the scientific Diaspora from European countries.

- **EUREKA.** Since its inception in 1985, EUREKA fund has supported research and development activities through public and private funding. Montenegro joined the program in 2012: the management of these activities has also been assigned to the Ministry of Science. The emphasis of EUREKA program is on linking science with business, and in particular the development of SMEs. Montenegro has been involved in three projects under this program since 2012 and could utilize more of its funds when plans for the Science and Technology Park materialize. This could be another opportunity for supporting the involvement of the scientific Diaspora.

In addition to existing funds, the World Bank strategy document from 2013, *Western Balkans Regional R&D Strategy for Innovation*, plans for a technical assistance program at a regional level.

This program would also include the *Research Excellence Fund* for cooperation with the scientific Diaspora, aiming to finance 80 research collaboration projects [WB2013].

## Creation of effective programs and measures

At the moment, Montenegro is a candidate for joining the European Union. Given the *Europe2020* strategy, following up on *Lisbon agenda*, knowledge-based economy and increased R&D investments should be the focus of every union member, as well as every aspiring country.

One of the goals of the Europe2020 strategy is for every country to invest 3% of its GDP into research and development (R&D) efforts. Montenegro is far from achieving this goal. According to the World Bank, average investment in R&D in Montenegro in the period 2005-2012 is 0.41% of GDP [WB2014]. Although in 2013 this percentage was increased to 0.5%, this is still on the low side in comparison with other countries in the region: whereas Serbia invests 0.99% and Croatia 0.75% of its GDP, Slovenia is at a high 2.80%.

(Strategy of Science and Research Activities of Montenegro (2012-2016) acknowledges the above fact, identifies 1% of GDP as the “profitability threshold” and sets a goal of 1.4% of GDP investment into R&D in 2016 [MMOS2012].)

Without a solid R&D infrastructure, it is not sensible to invest efforts into the permanent return of scientific Diaspora to Montenegro. Given the high costs that reintegration process would require, including those of legal and institutional adjustments in addition to R&D ones, this is not a viable option until the country achieves a high level of economic development (as was the case with Ireland, India, South Korea etc.).

However, as it is likely that members of the scientific Diaspora would be willing to contribute to developments in their home country, efforts should be directed at their virtual and temporary return, through visiting professorship positions, board memberships, strategy involvement, etc. To make these efforts more concrete, the planned networking conference should be accompanied by an analysis (through a questionnaire, panel discussions and similar) of modalities which would be of mutual interest to expatriate scientists and the stakeholders in Montenegro.

For example, the abovementioned Strategy of Science and Research Activities of Montenegro (2012-2016) includes several instruments which could directly use the input of scientists from abroad (e.g. the HERIC project, Centers of Excellence, Science & Technology Park, etc.). The first Center of Excellence (*BIO-ICT*), founded in 2014, already does this by employing an expatriate scientist as Intellectual Property advisor. One possibility that should not be disregarded is to more directly involve retired, experienced scientists into the development processes in Montenegro (this may be conditioned upon information on age structure of this population, which is currently unavailable and could be gathered during the mentioned conference). These activities should be in accordance with prioritized development areas specified in [MMOS2012].

As suggested elsewhere [Pozzi2011], in addition to an analysis on the Diaspora end, a communication campaign should be launched at the receiving end, i.e. in Montenegro itself, to raise awareness of Diaspora’s possible role and contribution. Namely, a chronic problem in the whole region of Former Yugoslavia seems not to be so much the willingness of the Diaspora to get involved, but an

awareness and interest of the domestic research community in collaboration [ACIPS2010, CEDEM2011, Pozzi2011]. For example, informal sources state that the mentioned Brain Gain Program of WUS Austria was not embraced by the scholars in Montenegro, who may have perceived the visiting scientists as competition. To that end, first a survey of stakeholders in Montenegro should be performed, and an awareness campaign created based on its results.

Once these goals are achieved – i.e. Diaspora involved in policymaking and aware of development dynamics in Montenegro – it will be easier to plan further collaboration activities. Being concerned mostly with R&D developments, such activities should ideally not be linked to general Diaspora discussions. Instead, they should be governed by a team assembled by the Ministry of Science, which is already involved in all the relevant preliminary processes, as noted above.

### **Best practice example: Croatia**

Although experiences of other countries should be adapted to Montenegro's size as well as economic and industrial output, there are multiple reasons to consider Croatia as the best practice example in this domain: as a neighboring country, Croatia shares to a large extent Montenegro's recent history, including the economic downturn and the brain drain problem; as a recent entrant to EU, it has gone through a similar process involving scientific Diaspora; and it has successfully incorporated scientific Diaspora into domestic innovation through its Unity through Knowledge Fund program (UKF).

UKF program has been initiated in Croatia in 2007, following two conferences for the scientific Diaspora (2004 and 2007). Its ambition since has been to include scientific Diaspora into development processes in Croatia as well as to prevent further brain drain from the country. The fund's initial budget amounted to EUR 5 million: 3.7M from the World Bank loan and 1.3M from the Croatian state budget; beside a six-member steering committee and the five-member approval committee (including members of the scientific Diaspora), its daily operations have been managed by a project management unit and a secretariat [UKF2007].

Through UKF cooperation projects involving the Diaspora, a significant transfer of knowledge and technologies has been achieved to date, in addition to inclusion of Croatian scientists into the networks and research communities available to Diaspora members. This attracted more financing from the domestic private sector as well as international funds into Croatian institutions.

The mission of UKF has been to manage many of the instruments similar to those within HERIC in Montenegro, including graduate research appointments and scientists' mobility. However, beside the government bodies, UKF has been directly connected with the Business-Innovation Center of Croatia (BICRO) from its inception. This ensured a transfer of knowledge into Croatian economy and faster commercialization of the most promising ideas.

The Croatian experience suggests that business community should also be involved in projects involving the Diaspora. This has, so far, not been done in practice in Montenegro. However, it is likely that business representatives would be more proactive in ensuring a transfer of knowledge from the Diaspora than the academic community (ideally, though, all stakeholders should be involved in the process). In addition, the successful example of UKF demonstrates that such a transfer of knowledge can be performed without a specific law governing Diaspora-related activities (which did not exist until late 2011), and independently from other issues concerning this population. Nevertheless,

similar programs are relatively expensive and, beside heavier investments, require readiness at institutional level to manage projects and coordinate efforts with foreign partners [Pozzi2011].

## Main recommendations

Given the analysis presented above, the main recommendations can be categorized into several clusters, outlined below. Note that specific recommendations towards a conference of Montenegrin scientific Diaspora are given in Appendix A.

### 1. Data consolidation & networking activities

Based on the data gathered for this Study's purposes, an online database system should be created, which could be achieved through a redesign of the existing portal *Naučna mreža (Scientific network)*. This system should be designed in such a way to enable easy insertion of new information: all expatriate scientists from the gathered lists should be invited to fill their profiles in the system. This process can be accompanied by a small questionnaire which would provide information about the researchers' willingness to take part in the planned conferences, engage in processes in Montenegro, etc.

Having obtained a critical mass of expatriate scientists explicitly stating a desire to become engaged, a conference can be organized as the initial networking activity that would bring expatriate scientists together with representatives of governmental bodies, domestic research institutions, business community, etc.

### 2. Public opinion surveys

Networking activities should be accompanied by questionnaires and analyses both on the Diaspora end and within the domestic research community. The conference should include panel discussions about modalities of involvement which would suit the Diaspora population best. Expatriate scientists should also be asked to consider setting up research labs in Montenegro and to identify what (e.g. infrastructure, manpower, resources) would be critical to achieve this goal.

In addition to sampling opinions of the Diaspora population, a survey should be conducted domestically as well - among the general public, researchers as well as representatives of the business sector – about the perception of the role scientific Diaspora would play in economic developments of Montenegro. Based on survey results, a communication campaign could be launched to promote this population's involvement, highlighting their achievements abroad and linking them with critical problems inside the country.

### 3. Mobility without brain drain

Although a systematic analysis of issues relating to scientific Diaspora has not been performed yet, its role in economic development of Montenegro is envisioned in several policy documents and programs. These documents do not go so far as to advocate a specific brain gain strategy – i.e. recommending efforts aimed at permanent, temporary or virtual return of expatriate scientists – and the conclusion of this Study is that such a strategy should focus on temporary visits and virtual involvement.

Montenegro should embrace brain circulation as an inevitable process of knowledge transfer in the globalization era, and facilitate the mobility of researchers. Nevertheless, measures

should be specified, and made operational, which prevent further brain drain. This aspect is currently lacking in national strategy documents; other sources indicate that similar measures often exist, but are not followed in practice. The new HERIC scholarship scheme defines several mobility opportunities conditioned upon the scholars' return to Montenegro. Such measures need to be enabled at an operational level in order to ensure their implementation in practice.

#### **4. An independent governing body**

Although a draft law is available that would govern Montenegro's activities towards the Diaspora population in general, in the scientific domain such a law may not be necessary for successful operation. This is demonstrated by the example of Croatia, which until recently did not have a specific law for this purpose, but instead implemented activities in this domain through existing innovation and science&technology policies.

As a consequence, stakeholders involved in scientific developments should not wait for the law to be passed, nor aim for a construction in which research collaboration is governed by the same body that deals with general Diaspora questions. Instead, this role can be taken up by a team assembled by the Ministry of Science, which would govern all science-related activities concerning Diaspora. This would be a natural extension of this Ministry's current role in e.g. the HERIC project, where it implements several internationalization activities. Ideally, the suggested team would operate as a separate body and include also members of Montenegrin research institutions, the scientific Diaspora, business community, etc.

The primary role of this body would be to match information on Montenegro's strategic development priorities and country's acute problems with expertise areas of the domestic research community and the scientific Diaspora. In addition, it would publish and manage project calls, evaluate proposals and assign available budget.

#### **5. Direct Diaspora involvement**

In addition to the suggested involvement in a governing body, members of scientific Diaspora should be engaged in development processes through other available instruments as well. The Strategy of Science and Research Activities of Montenegro (2012-2016) specifies multiple instruments which could be utilized for this purpose. For example, scholarship schemes outlined within the HERIC project should be used for visits of PhD students or post-docs to research labs led by members of the Diaspora. In addition, established researchers can take part in operations of Centers of Excellence and those experienced with commercialization of research activities could serve as advisors in the planned Science&Technology Park. Finally, retired expatriate scientists should be invited to devote more time to development processes in Montenegro.

Renowned members of the expatriate scientific community should also be involved in policymaking with respect to innovations, scientific strategy, R&D, and so on. It is worth considering a different strategy for each of the three destination regions identified above. All cooperation efforts should involve stakeholders both from academic, as well as business community, to ensure a consensus on the crucial long-term issues related to economic development of the country.



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## Interviews

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## **Appendix 1 - Specific recommendations for a conference of Montenegrin scientific diaspora**

Here, somewhat more specific recommendations are given to facilitate the networking activities which are to take place following this Study. In particular, a conference is envisioned that would bring together, on the one hand, scientists identified by the Study, and on the other, representatives of domestic research institutions, governmental bodies and the business community.

### **Preliminary activities**

Activities in this phase focus on questionnaires/surveys and on getting enough scientists from abroad to sign up for the upcoming conference. Suggested activities are as follows:

- Invite all the expatriate scientists, identified by this Study, to fill their online profile in the database. Include a question on age, as this information is unavailable in the Study's results.
- In the process of profile creation, include several questions about the researcher's further engagement: willingness to come to the planned conference, take part in collaboration activities, help the development processes with his/her expertise, etc.
- Regarding the conference specifically, inquire whether the researcher can recommend someone who may not be in the database, but would fit the conference concept (even if their education level is only BSc).
- Conduct a survey in Montenegro - primarily among researchers and representatives of the business sector – about their perception of scientific Diaspora and its role in the country's development processes.
- Launch a communication campaign to promote Diaspora's involvement, highlighting several individuals and their achievements (ideally linking their expertise to critical issues in the country).

### **Conference activities**

These activities relate to the conference itself, which should spread over one or two days. The focus is on finding modalities of Diaspora's involvement and matching available expertise with demand. The conference should be a combination of keynote speeches, panel discussions and demonstration stands. For example:

- Dedicate one hall for a demo market, where both expatriate scientists, as well as domestic researchers, would present posters or show videos with results of their work. The demo market should be accessible during the whole conference period and divided into sections based on scientific discipline.
- Invite several keynote speakers from the region and elsewhere, who can tell of their country's experience with brain gain efforts. E.g. someone from Croatia (UKF/BICRO),

someone from Serbia and possibly an authority on the topic such as Robert Guest (Business Editor of the Economist, author of 'Borderless Economics').

- Kick-off the conference with a presentation by a government representative, who would introduce Montenegro's current policies and strategies in the scientific domain, as well as outline possibilities for cooperation with Diaspora (as identified by this Study).
- Indicate contact persons who would be available for questions from different domains and have their own stands for this purpose. For example, a person in charge of academic collaboration, one in charge of legal issues in Montenegro, another one for knowledge transfer and SMEs, etc.
- Divide the rest of conference time into panel discussions and workshop sessions, some of which can possibly run in parallel. The themes should include e.g. Modes of Diaspora reintegration (i.e. permanent return vs. temporary visits vs. virtual presence); Researchers' mobility; Research partnerships (both EU collaboration and intercontinental partnership possibilities); Academia and industry (with a focus on industrial projects that could take place in Montenegro); Knowledge transfer and spin-off companies; and similar. Each session should be moderated by a member of the organizing team who would spark the discussion and lead the dialog.
- Leave two one-hour slots per day for general networking with drinks.

At the end of the conference, an assessment should be made of the degree to which previously defined goals have been met. It is preferable to formulate such goals through measurable outcomes, e.g. number of matches made between available positions abroad and potential candidates; or number of applications for an open position in Montenegro (e.g. an advisor in a company); and so on. In addition, a questionnaire should be handed out to conference attendees to determine whether the event has met their expectations and whether they are likely to engage in a concrete collaboration with the community in Montenegro, based on newly established contacts.