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PU = Public

PP = Restricted to other programme participants (including the Commission Services).

RE = Restricted to a group specified by the consortium (including the Commission Services).

CO = Confidential, only for members of the consortium (including the Commission Services).

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Introduction

The objective of the BS-ERA.NET project is to step up the cooperation and coordination of research activities carried out at national or regional level in the extended Black Sea Region through the networking of research activities, and mutual opening of national and regional research programmes, which is part of the networking activities.

Based on such strategic activities, any ERA-NETs could establish the following joint activities:

- mutual opening of facilities or laboratories;
- developing a scheme to facilitate mutual access to facilities or laboratories in one country for scientists from another.

On 4th October 2010 the First BS-ERA.NET Pilot Joint Call was launched. As a result of the Call, 11 research projects were selected for funding by the Group of Funding Parties (GFP). The GFP consists of funding organizations/programme owners from the following extended Black Sea Region: Armenia, Azerbaijan, Bulgaria, Georgia, Germany, Greece, Moldova, Romania, and Turkey.

Research facilities and laboratories in most cases represent the national research infrastructures (RI). Such RI could play a broad spectrum of vital roles in the country. One key role of these infrastructures is to build and operate major national research facilities and laboratories, facilities that are too large and complex for a corporation or university to support and operate effectively. In order for this research enterprise to operate in an effective and integrated way, scientists from all sectors must have access to these facilities.

However scientists and engineers from one country may also wish to use facilities at national laboratories abroad, for a variety of reasons. Facilities abroad may have unique or highly specialized instruments, have unique research programs in place or simply have facilities that are more simple in use than those in the current country. This is another important role of any research infrastructure.

An overall goal of this report is therefore to investigate the availability and terms of access of existing research infrastructures throughout the extended Black Sea Region. Besides, the concept of schemes for mutual opening of facilities is discussed. While the report naturally has a Black Sea Region perspective, we hope that the findings will be useful to users and facilities outside the Region.

I. Concept of scheme for mutual opening of facilities

Agreements for scientific and technological cooperation between the European Community and third countries, e.g. Ukraine and Russia, contain articles on the “free access to, and shared use of research facilities, including installations and sites for monitoring, observation and experimentation, as well as data collections relevant to the cooperative activities”.

At the same time other EECA countries which are participants of Black Sea collaboration programmes, such as Azerbaijan, Georgia, Republic of Armenia, Moldova do not have signed agreements with the EC covering Science & Technology.

Given the existing situation the optimum solution of the issue of mutual opening of facilities for participants of the Black Sea Research Programme will be inclusion of the respective clause to the Model Consortium Agreement. Such clause may contain the description of terms and conditions underlying the joint access to facilities (equipment), as well as a list of facilities supposed to be used for specific project. Presently this is a common practice for the majority of research and technology programmes.

The procedure of joint access to facilities may be arranged based on the known schemes. Let us consider a number of options.

- Formation of research organization consortiums for joint research. This is a traditional scheme for the majority of programs for scientific and technological cooperation where research laboratories are associated based on a mutual complementary principle.
- Virtual laboratories. The advent and growth of digital telecommunications has accelerated the globalization of scientific research

through support for greatly enhanced interaction among scientists at distant sites and the development of new organizational structures for research. Virtual laboratories allow conducting joint research using equipment placed in partner organizations. In these circumstances the research monitoring and transfer of information to other participants may be performed on-line using telecommunications. This scheme is a particular case of the scheme indicated above.

- Researchers' long-term and short-term visits to partner research organizations for work on joint topics. This scheme supports research visits to laboratories throughout Europe and the world. International exchange is a key feature of cooperation in the area of science and technology.
- Bilateral S&T Agreement – mostly all BS countries have S&T Agreements on the State or institutional level with each other. They also could explore conditions of these Agreements to have a legal basis for access to research facilities of each other
- Collective Use Centers are rather widely used worldwide, including in BS countries.

(For example in Ukraine, 39 collective use centers have been functioning in various fields of scientific research within the framework of the Ukrainian Academy of Science).

II. Research infrastructure: inventory in the extended Black Sea Region

As it was mentioned above, it is important to define access beyond for specific research laboratories or facilities and for national research infrastructures since they are common player in scientific activities at national level.

To do this, first an inventory of existing infrastructure was carried out in the extended Black Sea region. The information collection exercise was carried out between May 2011 and March 2012 based on questionnaire (Annex 2) which was developed by BS-ERA.NET Consortium. The research infrastructure questionnaire was available during indicated period of time through BS-ERA.NET portal (www.bs-era.net) using preregistered access (login and

password). The authorization information and covering letter were disseminated by each project partner at relevant country within research community and RI administration bodies.

The main attention was directed to investigate research infrastructure for research in Climate & Environment and Energy areas since these priorities were defined by BS-ERA.NET Consortium as common and mutually beneficial in the Black Sea Region. However we have received and include in the inventory some other responses, especially infrastructure related to Biomedical and Life Sciences, Astrophysics, Materials Science and Computation and Data Treatment. The presented inventory (Annex 1) simply allows finding relevant infrastructure for specific country providing short description of existing facilities, capacity and in some cases activities undertaken and services provided for users. In addition conditions and restrictions of access are presented.

As a result of inventory 45 research infrastructures from 10 countries (Armenia, Bulgaria, Germany, France, Georgia, Greece, Italy, Moldova, Romania, Turkey, and Ukraine) were examined and arranged in the chart (Annex 1). Climate change, environmental problems in the Black Sea Region result in unexceptional coverage of relevant research infrastructures in all specified countries. It makes possible to find project partner and research facilities in the field of Climate & Environment across whole Black Sea Region. Besides, 9 infrastructures in 5 countries (Germany, Georgia, Moldova, Romania, and Ukraine) are representing Energy research community in the Region.

As one of key task of this report, the condition and restriction of access to research facilities are analyzed. The most popular scheme for mutual opening of facilities is contracting. Some examples show willingness of institution to be involved in joint projects supported by government or other interested foundation. Both of these schemes bring common point of involving own research infrastructure staff only for usage of facilities under joint research activities. In most research infrastructures located at Member States, the non-EU researchers are eligible to use facilities. However such applications are subject to peer reviews overseen by the acting Scientific Steering Committee comprised of leading European researchers.

Annexes

Country	Title of organization	Services/Facilities	Accessibility	Scientific field				
				Environmental Sciences	Energy	Biomedical and Life Sciences	Materials Science	Computation and Data Treatment
AM	The Center for Ecological-Noosphere Studies of National Academy of Sciences of RA www.ecocentre.am	The representative fields include environmental geochemistry, GIS and remote sensing, biogeochemistry, bio-energy and fodder quality, food risk assessment. All analyses are performed in ISO 17025 accredited Central Analytical Lab	Free of charge for MSc and trainee. For other on contract base.					
AM	Institute for Physical Research of the National Academy of Sciences of Armenia www.ipr.sci.am	12 scientific laboratories; - optical, glass-blowing, mechanical workshops, electronics engineering group	For internal research infrastructure staff: Free access within the laboratory; free/contractual access outside the laboratory					
AM	A.I. Alikhanian National Laboratory (Yerevan Physics Institute) www.yerphi.am	Electron synchrotron Electron Linacs LEA 50 , E = 50MeV (design-75MeV), beam intensity 10mA LEA 20 , E = 20MeV (design-120MeV), beam intensity 1000 m A LEA 8 , E = 8MeV , beam intensity 20mA LEA 10 , E = 10MeV , beam intensity 750mA	On the contract base					
AM	Byurakan Astrophysical Observatory of National Academy of Sciences of Armenia www.bao.am	2.6 m Cassagrain telescope and 1m Schmidt telescope; 1. Detection of extragalactic objects with UV continuum (First and Second Byurakan spectral sky surveys); 2. Search for flare stars.	On the contract base					
BG	BGODC, IO-BAS www.bgodc.io-bas.bg	Bulgarian National Oceanographic Data Centre (BGODC) serves as a local portal for the national and international exchange of oceanographic data.						

BG	IO-BAS www.io-bas.bg	RV Akademik	On project and contract basis					
BG	IO-BAS www.io-bas.bg	BulArgo, monitoring and measurements of the Black Sea	The data are available at the Institute of Oceanology website (http://www.gisserver.io-bas.bg/Web_argo)					
BG	Operator: Institute of Fish Resources	RV Prof. Alexander Valkanov The RV Prof. Alexander Valkanov is a multipurpose research vessel which carries out a wide variety of survey operations in offshore, acoustic and oceanographic surveys, environmental sampling and hydrographic surveying.	The RV Prof. Alexander Valkanov is being made available to the EUROFLEETS project for a total of 5 days for one or two cruises, this duration can be extended to a maximum of 10 days for well evaluated projects, subject to budget availability. The vessel will be available annually for work in the Black Sea from 15 May to 15 October.					
BG	Bulgarian Ship Hydrodynamics Centre in Varna to Institute of metal science, equipment and technologies “Acad. Angel Balevski”	Deep water towing tank with dimensions 200 m x 16 m x 6.5 m, equipped with towing carriage with maximum speed 6 m/sec, wavemaker for regular and irregular waves and large amplitude planar motion mechanism; - Shallow water towing tank with dimensions 200 m x 16 m x (0 ÷ 1.5) m with towing carriage with maximum speed 6 m/sec; - Seakeeping and maneuvering basin with dimensions 60 m x 40 m x 2.5 m, ultrasonic system for registration of the trajectory of free running models and wavemaker for regular and irregular waves; - Wave flume with wavemaker for coastal hydraulics researches with dimensions 30 m x 0.8 m x 0.9 m; - Open water area for large scale models 170 m x 160 m; - Cavitation tunnel with two measuring sections (small working section with dimensions 2.6 m x 0.6 m x 0.6 m with water velocity up to 14 m/sec, minimum cavitation number 0.2 and large working section with dimensions 6.0 m x 1.4 m x 0.7 m, water velocity up to 4.5 m/s, max. model length – 5m); - Aerodynamic tunnel with working section 0.466 m x 0.8	The access to the equipment and facilities for other universities, research organizations or single research team is on agreement base.					

Annex 1

		m and flow speed 66 m/sec						
DE	Forschungszentrum Juelich GmbH - Juelich Centre for Neutron Science JCNS www.fz-juelich.de	Juelich Centre for Neutron Science JCNS operates neutron instruments at leading neutron sources FRM II (Munich, Germany), ILL (Grenoble, France) and SNS (Oak Ridge, USA). For more details see http://www.fz-juelich.de/jcms/EN/Institutsbereiche/_node.html	External users can apply twice a year for beam time at instruments at FRM-II, ILL and SNS. Beam time allocation is based on the recommendations of the external JCNS Scientific Committee and is granted free of charge. For more details see http://www.jcms.info/jcms_proposals/					
DE	DESY www.desy.de	DESY is operating on site two synchrotrons DORIS III and PETRA III and one Free electron laser FLASH open for access to all scientists. DESY is also involved the European XFEL and other research infrastructures in the fields of high energy	The access to the DORIS III, PETRA III and FLASH is free of charge and open to all scientists. Twice a year scientists can submit proposals for using the RIs which are evaluated on scientific excellence only.					
DE	Helmholtz Centres	Sixteen German research centres have joined forces in the Helmholtz Association to investigate complex social, scientific and technological issues. The research centres concentrate their resources in cross-centre research activities in six major research fields – Energy, Earth and Environment, Health, Key Technologies, Structure of Matter, and Aeronautics, Space and Transport.						
DE	Forschungszentrum Juelich GmbH - Juelich Supercomputing Centre JSC www.fz-juelich.de	Supercomputing facilities: JUGENE (first European petaflop computer), JUROPA (mainly used by German community), HPC-FF (dedicated to fusion research) Details at http://www.fz-juelich.de/portal/EN/Research/InformationTechnology/Supercomputer/_node.html	Applications are subject to peer reviews overseen by the PRACE Scientific Steering Committee comprised of leading European researchers - http://www.prace-ri.eu/					
FR	Direction Océanographie Spatiale, CLS www.cls.fr	CLS is actively involved in oceanographic research that is yielding vital data to understand the environmental effects of climate and mitigate major environmental crisis.						
GE	TSU-DNA Tbilisi State University www.oceandna.ge	Unit of IOC/UNESCO International Oceanographic Data and Information Exchange (IODE) Programme in 2001 with scientific and educational purposes at the Iv. Javakhishvili Tbilisi State University. Its missions are to collect, acquire, processing, store and disseminate the marine data and metadata sampled by Georgian institutes and agencies, as well as to provide graduate level	On the contract base					

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		education in marine sciences.						
GE	Georgian Hydro Power, www.Ghp.ge	GHP has united specialists who have vast experience in study and designing of hydro technical construction developments on rivers and hydro-power plants.	Contracting					
GE	V. Chavchanidze Institute of Cybernetics of Georgian Technical University www.Cybernet.ge	Mathematical cybernetics, the stochastic analysis and mathematical modelling; - Applied systems of pattern recognition; - Biocybernetic systems; - Nanomaterials and elements of computer facilities; - Coherent and quantum optics, holographic record and processing of the information; - Optically controlled anisotropic systems.	The access to the equipment or facilities for non research infrastructure staff/non resident can be carried out on the contract base both paid or free of charge.					
GR	Hellenic Centre for Marine Research / Research Centre supervised by the General Secretariat for Research and Technology www.hcmr.gr	Modern Centre with facilities ranging from aquaria (2) and research vessels (2) to the fully equipped laboratories dedicated to all sectors of marine science.	Query that has to be approved by the Council of the Centre					
IT	Istituto Superiore di Sanità www.iss.it	Main Italian Institute of scientific-technical research, control and advice in public health. ISS core areas are health policies; planning, managing, and assessing human, material and financial resources; epidemiology and evaluation.	On the contract base					
IT	Istituto Nazionale di Geofisica e Vulcanologia www.bo.ingv.it	National research centre for the study and the monitoring of geophysical phenomena. INGV branches are located all over the Italian territory: Bologna, Catania, Napoli, Milano, Palermo, Pisa, Roma, Centro Nazionale http://www.bo.ingv.it/contents/resources.html						
MD	Institute of Mathematics and Computer Science www.math.md	Hardware: 48-core cluster (2008 year of acquisition); 78 PC connected in local network. Subscription to peer-reviewed, international journals: 25 on Math, obtained on exchange. Access to electronic databases: MathSciNet.	No restrictions					
MD	Institute of Microbiology and Biotechnology www.imb.asm.md	Applied and basic research in the field of general and industrial microbiology	Contract base for R&D Institutions					
MD	Institute of Geology & Seismology of the Academy of Sciences of Moldova	Infrastructure of the Institute is presented the laboratory equipment for research in field of geology, quality of mineral resources, paleontology, hydrogeology,	On the contract base/joint projects					



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	www.igs.asm.md	geochemistry, seismology, and a network of seismic stations of Republic of Moldova.						
MD	Institute of Power Engineering of Academy of Sciences of Moldova www.ie.asm.md	Institute provides researches in energy field and develop policies in power sector for Government	On the contract base					
MD	Institute of Ecology and Geography www.ieg.asm.md	Environmental Quality Ecobioindication and Radioecology Environmental Standards and Norms Human Settlements Ecology Biogeocenosis with Geoinformational group Dynamic Geomor	On the contract base					
MD	Institute of Zoology www.zoology.asm.md	9 equipped laboratories, 2 specialized scientific councils as well as 2 nation	On the contract base					
MD	Institute of Chemistry of the Academy of Sciences Academy of Sciences of Moldova www.chem.asm.md	NMR, Mossbauer, FTIR, UV/Vis, AAS Spectrometers, Chromatograph HPLC	Measurements using the facilities available at Institute of Chemistry for economic agents could be offered at a reasonable price on the contract base					
MD	Institute of Applied Physics www.phys.asm.md	Physics of condensed matter, atoms and nuclei; semiconductor materials, including nano- materials; quantum optics and electronics; development of multifunctional	On the contract base					
RO	National Institute of Materials Physics www.infim.ro	The Institute has a complex research infrastructure, including: - chemistry laboratories for preparation of materials by wet chemical methods - electrochemistry laboratory - deposition by RF-sputtering - deposition by pulsed laser deposition (PLD)	based on common projects free for PhD students or master diploma					
RO	Institutul de Studii si Proiectari Energetice (ISPE SA) www.ispe.ro	Different types of software, such as: for overhead transmission lines design, for pipes resistance and flexibility computation, for thermal power plants modeling, power system simulator computation, for power plants and piping systems designing, etc.	No restrictions					
RO	National Institute for research and Development in Microtechnology, www.imt.ro	The majority of experimental resources are accessible through an "open experimental centre", -called IMT centre for Micro- and NAno FABrication (IMT-MINAFAB). There are two new clean room areas (operational since September 2008), as follows: Clean room	Access is granted based on research contracts (national or international projects).					
RO	National Institute for Marine Research and Development	NIMRD includes a laboratory for measurements and physical/ chemical analyses , for the next measurements: -	On the free of charge contract base/On the paid contract base					



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	"Grigore Antipa" www.rmri.ro	determination for marine nutrients loads (fosfat,i, silicat,i, azotit,i) ; - determination for sediments and bodies heavy meta					
TR	Eastern Mediterranean Centre for Oceanography and Limnology www.emcol.itu.edu.tr/	1.Core Analyses Laboratory - ITRAX Core scanner for sub-mm-scale resolution XRF analyses, digital X-ray radiography and color scanning of cores, - MSCL core logger with gamma density, magnetic susceptibility, p-wave and electrical resistivity sensors. 2. Sedimentology Laboratory - laser grain size analyzer and mechanical sifter, smear slide preparation and optical microscopy. 3.Geochemistry Laboratory - TOC analyzer for organic and inorganic carbon analyses, fossil separation for isotope analyses. 4. Wet Core Laboratory -for sample description, digital photography, geomechanical tests, discrete sampling, and wet-sieving for microfossils. 5. Core Repository (13 m2 walk-in core refrigerator (4sC) for storage of whole or split sediment cores)	A fee applies for covering consumable, maintenance and staff expenses.				
TR	T.U. Faculty of Science, Dept. of Biology, Edirne fenedb.trakya.edu.tr	There are several research laboratories equipped specifically for molecular, microbial, cell and tissue culture, plant physiology and systematic, animal morphology and systematic, mammalian conservation and animal (in particular social insects) behavioural researches. A well established Herbarium provides many types of plant specimens for all visitors. An invertebrate and vertebrate museum harbors specimens of a wide range of different taxa.	All equipment and facilities have free access for all visitors.				
TR	TUBITAK Marmara Research Centre www.mam.gov.tr	1.Multi-disciplinary earthquake research infrastructure (monitoring stations) and data processing and evaluation laboratory 55 continuous radon gas measurement stations 24 continuous spring water monitoring stations 72 micro-seismology (earthquake) stations 42 GPS stations Petroleum and organic geochemistry laboratory sufficient	No access for non-research infrastructure staff				

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		for earth gas, coal and coal gas research						
UA	National University of Life and Environmental Sciences of Ukraine (NUBiP) http://nubip.edu.ua/en		Open access through joint projects and cooperation agreements					
UA	Institute of Biology of Southern Seas of the NASU (IBSS)	Institutional Repository or the long-term preservation of digital resources; The IODE e-Repository Service: Research literature from Marine Science and Oceanographic Research Centres;	Free access by request/ joint projects					
UA	Institute of Nuclear Physics http://www.kinr.kiev.ua	Accelerators: Isochronous Cyclotron U-240; 10 MV Electrostatic Tandem Accelerator; Cyclotron U-120; Research Reactor WWR-M; Physical Protection, Accounting and Control Training Centre;	Access to the training courses, workshops and seminars for specialists in nuclear safety and nuclear material physical protection, control and accounting from Central European countries, the NIS, and the Baltic states					
UA	Institute of High-Energy Physics and Nuclear Physics under National Science Center Kharkov Institute of Physics and Technology	Procedures and equipment for the analysis of structure and composition of substances The large electron linear accelerator (LUE-2000); a pilot batch of accelerating installations "Sokol" designed for nuclear microanalysis is introduced into industry.	Half-open access					
UA	Bogomoletz Institute of Physiology of the NASU http://wiki.biph.kiev.ua/	-Unique Bank of Cell Lines; -CShU Equipment for cell biophysics and physiology: Confocal microscope FV1000-BX61WI Olympus, Japan, FluoView FV1000 scan head with SIMS (2nd scanner system), Lasers, 7500 Fast Real-Time PCR Systems	Free access for users from NASU and in frame of joint projects					
UA	Institute of Molecular Biology and Genetics of the NASU http://www.imbg.org.ua/	Device for RNA/DNA oligonucleotides synthesis: AKTA oligopilot 10, Amersham Biosciences, Sorvall WX 80 Ultra, Thermo Electron, Germany: Analysis of proteins, complexes	Free access for users from NASU and in frame of joint projects. Access for outer users according to direct agreements/ inter-academy agreements.					
UA	E.O.Paton Electric welding Institute of the NASU http://paton.kiev.ua/	CShUs for fracture mechanics Test unit MTS 318.25, USA; "GLEEBLE - 3800" DSI, USA – device for simulation of welding and heat treatment, research and measuring-analytical equipment.	Access within training and attestation of scientific and engineering staff workers; scientific-technical and analog expertise of projects, structures and technologies; scientific-technical consultations					
UA	Frantsevich Institute for Problems	CShU TEM-SCAN Field emission transmission	Open access by requests and cooperative					



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	of Materials Science of the NASU www.materials.kiev.ua	electron microscope JEM-2100F, JEM-100CX II, Superprobe 733, JAMP-10S, T-20;	programs/projects					
UA	Ukrainian Research & Academic Network (URAN network) http://www.uran.net.ua	Service providing; physically unites more than 80 R&D and educational institutions (180 points of presence) and operates own optical networks in 15 Ukrainian cities 200 km long and 80 km cross-border fiber optic line Lviv - Poland	Access according to the Acceptable Use Policy (AUP)					
UA	Institute for Applied System Analysis under National Technical University "KPI" http://ipsa.edu.ua/	Ugrid Ukrainian subsidiary of the World Data Centre (WDC UV)	E-Journals "System Sciences and Cybernetics", System Research & information technologies http://journal.iasa.com.ua					

RESEARCH INFRASTRUCTURE QUESTIONNAIRE

1. Country/city of research infrastructure¹ location

2. Name of organisation / research infrastructure owner

3. Institution type

- ☐ University and other higher education organisation
- ☐ Public research organisation
- ☐ Other (please specify)

4. Short description of organisation

5. Web-site

6. Contact details

Contact person:

e-mail:

Telephones:

Fax:

¹ Research infrastructure covers facilities, resources and related services that are used by the scientific community to conduct top-level research in their respective fields.

7. Scientific area for available research facilities

<input type="checkbox"/> Energy	<input type="checkbox"/> Environmental, Marine and Earth sciences
<input type="checkbox"/> Life Sciences	<input type="checkbox"/> Physics and Astronomy
<input type="checkbox"/> Material Sciences, Chemical and Nanotechnologies	<input type="checkbox"/> Engineering
<input type="checkbox"/> ICT, Mathematics	<input type="checkbox"/> Socio-economic sciences
<input type="checkbox"/> Humanities and behavioural sciences	<input type="checkbox"/> OTHER (please specify)

8. Short description of research infrastructure

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9. Conditions for access²

Conditions of access to the equipment or facilities for research infrastructure staff:

Conditions of access to the equipment or facilities for non research infrastructure staff/non resident:

² On the contract base? paid or free of charge?

10. Restrictions on access to the equipment or facility

11. Activities undertaken and services provided for users

Please indicate any further comments you would like to make concerning access to the infrastructures in your country