

Standard Summary Project Fiche**1. Identification**

Project Title	Strengthening Radiation Protection and Nuclear Safety in Montenegro through Capability Upgrading of Technical Support Institution
Cris Decision number	2011/023-388
Project no.	3
MIPD Sector Code	5. Energy (Multi-Beneficiary MIPD – 5.Transport and Energy Infrastructure, including nuclear safety)
ELARG Statistical code	03.64 - Nuclear Safety
DAC Sector code	23064
Total cost (VAT excluded)¹	EUR 395 000
EU contribution	EUR 300 000
EU Delegation in charge/Responsible Unit	Unit D3 - Regional Programmes DG Enlargement
Management mode	Centralised
Implementing modality	Project
Project implementation type	Bilateral
Zone Benefiting from the action/Beneficiaries	Montenegro
Final date for contracting	3 years following the date of conclusion of the financing agreement
Final date for execution of contracts	2 years following the end date for contracting
Final date for disbursement	1 year following the end date for execution of contracts

¹ The total project cost should be net of VAT and/or of other taxes. Should this not be the case, clearly indicate the amount of VAT and the reasons why it is considered eligible.

2. Overall Objective and Project Purpose

2.1 Overall Objective

To improve radiation protection and nuclear safety in Montenegro.

2.2 Project purpose

To upgrade the technical capabilities of the Centre for Ecotoxicological Research of Montenegro (CETI) in the following fields:

- Monitoring of the **radioactivity in the environment**, including response to radiological/nuclear **emergency situations**
- Management of low and medium radioactivity **radioactive waste storage and transportation** of radioactive materials
- Professional, patient, public and environmental **exposure control**
- **Quality assurance/ Quality control (QA/QC) of medical radiation source**

Through this upgrading, it will be possible to broaden the certification/accreditation of CETI activities, so as to fully cover the radiation protection and nuclear safety area which is of relevance in Montenegro.

2.3 Link with AP/NPAA/EP/ SAA

The 2007/49/EC Council Decision of 22 January 2007 on the principles, priorities and conditions contained in the European Partnership with Montenegro specifies that a nuclear regulatory body should be in place and that appropriate legislation in the field of nuclear safety and radiation protection should be laid down. It also mentions that actions should be undertaken in order to facilitate the ratification of the international nuclear safety conventions to which EURATOM is already a contracting party. Since the CETI is the Technical Support Organisation (TSO) of the Montenegrin regulatory body, its upgrading is in line with the enhancement of the technical capacity of the latter.

2.4 Link with MIPD

The IPA Multi-Beneficiary Multi-annual Indicative Planning Document (MIPD) for the years 2011 - 2013² states that:

“Sector Objectives for EU support over next three years

As for nuclear safety and radiation protection, IPA Multi-beneficiary assistance will aim at strengthening the capacities of national regulatory authorities dealing with nuclear safety and radiation protection, thus decreasing the radiological risks for the public associated with radioactive materials and waste as well as the use of devices generating ionising radiation.

Indicators

As for nuclear safety, support in this area will result in the full transposition of the relevant EU *acquis* into the national legislations of all Beneficiaries. In addition, conditions will be in place allowing for the appropriate handling and storage of radioactive material and waste.

In order to meet the sector objectives outlined above, actions foreseen under this sector will aim at achieving the following:

² C(2011)4179, of 20.06.2011.

- Technical capacity of the national regulatory agencies enhanced to comply with EU *acquis* and regulations on nuclear safety and radiation protection.”

In addition, the IPA Multi-beneficiary Multi-annual indicative Planning Document (MIPD) 2009-2011³, *section 2.3.3.11 - Nuclear Safety and Radiation Protection*, includes among its objectives “enhance the technical competence and administrative capacity of the national radiation safety authorities and other relevant public organisation”. Since the CETI is the TSO of the Montenegrin nuclear regulator, enhancement of its technical capabilities is fully in line with the Multi-beneficiary MIPD.

2.5 Link with National Development Plan

Not applicable.

2.6 Link with national/sectoral investment plans

Not applicable.

3. Description of project

3.1 Background and justification

Montenegro is a ‘non-nuclear’ country, which means that use of radiation sources is limited to simple medical and industrial applications. The Public Institution Centre for Ecotoxicological Research of Montenegro (CETI) in Podgorica was founded by the Government of Montenegro in 1997 as a support institution for environmental monitoring including radiation protection. CETI Department for Radiation Protection and Monitoring (DRPM) performs most of the measurements, monitoring and expertise services in this field in the country. More information about CETI-DRPM (foundation, aims, current state of activities, future plans) is given in Annex VI.

When analyzing the existing radiation protection (RP) infrastructure and services in Montenegro, CETI-DRPM will appear as the principal stakeholder - having most of the necessary equipment, well qualified staff and efficient organizational structure. However, when comparing the existing capabilities (Annex VI) with the desired level, some enhancement of the technical capabilities is still needed in four main areas:

1. Monitoring of radioactivity in the environment and preparedness/ response to radiological/nuclear emergency situations

Article 35 of the Euratom Treaty requires establishing facilities necessary to carry out continuous monitoring of the levels of radioactivity in air, water and soil to ensure compliance with basic safety standards.

Montenegro has developed an environmental monitoring programme, which is operational but nor covering all different media of biosphere (air, soil, precipitation, surface waters and also drinking water, foodstuffs and feeding stuffs). To carry out continuous monitoring of the levels of radioactivity in the environment in normal as well as in the emergency cases, additional equipment for upgrading the existing technical infrastructure is needed to fulfil minimal requirements according to the relevant EU *acquis*. This is as well a conclusion of IPA 2007 Project “*Assessment of the needs and proposed actions in order to perform the monitoring of the radioactivity in the environment in Albania, Bosnia and Herzegovina, Croatia, the former Yugoslav Republic of Macedonia, Montenegro, Serbia, as well as*

³ C(2009)4518, 16.06.2009.

*Kosovo*⁴”).

In this field, according to the results of the IPA 2007 project mentioned above the following equipment would be required:

- Provision of 5 automatic gamma dose rate (GDR) stations and their connection into a CETI-controlled network. The network could further be interconnected into regional monitoring grid. Suggested locations are presented in IPA 2007 project results. One backup gamma dose rate (GDR) station will be also beneficial to ensure full availability of the system 24/24 hours and 7/7 days.
- Provision of one measurement equipment for laboratories using alpha-spectrometry systems with data analysis software for alpha-spectrometers. This equipment has been already provided through an IAEA supply project (MME3002) so it's not needed anymore.
- Although there is recently acquired instrumentation for total beta counting and for alpha spectrometry. Namely, these techniques require a relatively complicated sample preparation. Provision of a basic radiochemistry unit (fume hood, columns, dishes, mixer, evaporator, heaters, oven, balances, chemicals, standards) would be necessary to cover this area.
- To be able also to completely set up a Tritium environmental monitoring program, a Tritium electrolytic enrichment system would be necessary to prepare sample to be used in Liquid Scintillation Counter

2. Radioactive waste management and transportation of radioactive materials

By contractual arrangement with the Ministry of Tourism and Environmental Protection, CETI is in charge of radioactive waste management in Montenegro, including recently constructed low and medium activity waste storage (RAOS) in Podgorica, which is located within CETI premises at town outskirts. There was a national Technical Cooperation project ongoing with the International Atomic Energy Agency (IAEA) on this subject, through which the storage was equipped and four CETI staff members trained for one month for operating the storage (code: MNE/3/002, duration: 2007-2008).

Storage licensing and accreditation is ongoing. Hence, the next item should be still covered in this respect:

- A specialized ADR vehicle for transportation of radioactive substances, since there is none in Montenegro up to now. The vehicle will be used not only for transportation of disused sources and radioactive waste, but also for medical sources (e.g. radiopharmaceuticals), industrial sources (i.e. gamma-radiography), calibration sources, etc. – in accordance with existing regulations.

3. Professional, patient, public and environmental exposure control

This is an important segment of radiation protection practice and of CETI activities as TSO to the Environmental Protection Agency (EPA) in Montenegro. CETI is authorized for these activities by the Ministry of Health and Ministry of Environmental Protection. Personal thermoluminescent (TLD) dosimetry service was established in 2006 and is so far the only one in Montenegro. There is a Harshaw 4500 TLD Reader and a set of 900 TLD cards (badges). From the 2006 CETI contracted the services of the TLD control for all medical and other institutions in Montenegro. Until 2006 TLD control was organised from Belgrade-Serbia. This service should be strengthened, by additional elements:

⁴ under UNSCR 1244/1999.

- Back-up instrument in TLD services, in case the first one goes out of order (for a short or long term).
- Around 1000 badges will be needed, having in mind that 2.5 badges per each person monitored (accounting for badge exchange and for its loss/ damage) and some 800 professionally exposed persons to be monitored in Montenegro.
- Around 200 TLD ring dosimeters will be needed as well as extremity dosimetry is not performed so far in Montenegro.
- TLD dosimeters for environmental monitoring purposes will also be needed to further strengthen the environmental dosimetry program.
- From 2004 CETI possess certificates for ISO 9001:2000 and ISO/IEC 17025:2000 and 2006 for dosimetry control.

4. QC/QA of medical radiation sources

In 2007 CETI also started with QC/QA of medical radiation sources. For this purpose one staff member was trained in Italy, obtaining master degree in this specialization (the only specialist of the kind in Montenegro). One multipurpose instrument currently serves for X-ray machine control, but in order to complete the scope of medical applications (e.g. mammography, nuclear medicine, radiotherapy, brachytherapy), additional instrumentation and training will be needed, including:

- Multimeter for radiology mammography, fluoroscopy, pulsed fluoroscopy, dental, panoramic dental and CT systems
- Densitometer
- Sensitometer
- Luminance meter
- Illuminance meter
- Set of dosimeters for various dose ranges and origins
- Sets of ionization chambers and of electrometers
- Resolution patterns
- QC test objects
- Set of phantoms for various exposition sources

The above instrumentation can also be used for QC/QA of industrial sources – a regulatory requirement which is not currently in practice in Montenegro.

3.2 Assessment of project impact, catalytic effect, sustainability and cross border impact

The upgrading of the technical capacity of the Montenegrin technical support organisation to the nuclear regulatory body should result in an improved control of the exposure to ionising radiation of workers and patients. It will allow the regulatory body to know whether the regulations in the field of radiation protection are respected and wherever necessary whether they should be enforced. It has a catalytic effect since a better understanding of the radiation risks of the Montenegrin population should open up to new regulations, reinforcement of the radiation protection measures in Montenegrin medical establishments as well as in some sectors of the industry. It has also a training component that should make the project sustainable.

3.3 Results and measurable indicators

Results in relation with activity 1:

- Gamma dose rate (GDR) stations and their connection into a CETI-controlled network, purchased and installed in the country and CETI's premises;
- Radiochemistry fume hood and related equipments (columns, dishes, mixer, evaporator, heaters, oven, balances, chemicals, standards) purchased and installed in CETI's premises.
- Tritium electrolytic enrichment system purchased and installed in CETI's premises.

Measurable indicators in relation with activity 1:

- Online accessibility of radiation dose-rate within the country;
- Decreasing of source of radioactive pollution of environment.

Results in relation with activity 2:

- Specialized vehicle (together with accessories) for the transportation of radioactive materials purchased and delivered in CETI's.

Measurable indicators in relation with activity 2:

- Number of radioactive sources transferred to CETI premises using the specialized vehicle;

Results in relation with activity 3:

- TLD reader purchased and delivered to CETI;
- Personal and environmental TLD cards purchased and delivered to CETI;
- CETI users of the equipment properly trained.

Measurable indicators in relation with activity 3:

- Improved databases of individual/collective and environmental exposures as a result of the use of new equipment;
- Number of certificate attendances for trainees.

Results in relation with activity 4:

- Measuring equipment for QC/QA controls of radiology mammography, fluoroscopy, pulsed fluoroscopy, dental, panoramic dental and CT systems purchased and delivered to CETI;
- CETI users of the equipment properly trained.

Measurable indicators in relation with activity 4:

- Decrease in worker, patient and public exposures as a result of the use of new equipment;
- Number of certificate attendances for trainees.

3.4 Activities

Activity 1: Monitoring of the radioactivity in the environment and preparedness/ response to radiological/nuclear emergency situations

- Activity 1.1: Provision of 6 (5 in operation + 1 backup) Gamma dose rate (GDR) stations and their connection into a CETI-controlled network, cca. EUR 45 000; and putting into operation distance monitoring network, cca. EUR 15 000. (Lot 1)

Activity 1.2: Provision of radiochemistry unit (fume hood, columns, dishes, mixer, evaporator, heaters, oven, balances, chemicals, standards), cca. EUR 45 000 (covered by CETI).

Activity 1.3: Tritium electrolytic enrichment system for Liquid Scintillation Counter, cca. EUR 40 000 (covered by CETI).

Activity 2: Radioactive waste storage and transportation of radioactive materials.

- Activity 2.1: Provision of one specialized vehicle for the transportation of radioactive materials, including waste, cca. EUR 30 000. (Lot 2)

- Activity 2.2: Modification and equipping the specialized vehicle according to the need, cca. EUR 10 000 (covered by CETI).

Activity 3: Professional, patient, public and environmental exposure control including training of staff to use equipment (Lot 3)

- Activity 3.1: Provision of TLD reader, cca EUR 60 000.
- Activity 3.2: Provision of 1000 TLD cards (badges), cca. EUR 20 000.
- Activity 3.3: Provision of 200 TLD ring dosimeters, cca. EUR 5 000.
- Activity 3.4: Provision of additional 100 TLD cards (badges) for environmental monitoring, cca. EUR 5 000.

Activity 4: QC/QA controls of radiology mammography, fluoroscopy, pulsed fluoroscopy, dental, panoramic dental and CT systems (cca EUR 120 000, training included), in particular:

- Multimeter for radiology mammography, fluoroscopy, pulsed fluoroscopy, dental, panoramic dental and CT systems
- Densitometer
- Sensitometer
- Luminance meter
- Illuminance meter
- Set of dosimeters for various dose ranges and origins
- Sets of ionization chambers and of electrometers
- Resolution patterns
- QC test objects
- Set of phantoms for various exposition sources

Activities 1.1, 2.1, 3 and 4 of the project will be implemented through one to four supply contracts for a total amount of EUR 300 000 that will be concluded following a call for tenders (4 lots) launched in the first quarter of 2012. Additional supply contract for an estimated amount of EUR 95 000 fully financed by the beneficiary organization will be concluded by CETI following a call for tenders to be launched in the first quarter of 2012 (parallel co-financing) by the beneficiary organisation to implement activities 1.2, 1.3 and 2.2 (complementary activities to lots 1 and 2).

3.5 Conditionality and sequencing

Not applicable.

3.6 Linked activities

The International Atomic Energy Agency (IAEA) has provided Montenegro with some support over the last years through the following projects:

- Strengthening radioactive waste management;
- Improvement of radiotherapy;
- Upgrading a persistent organic pollutant laboratory towards accreditation for environmental monitoring.

The 2007 IPA horizontal programme on nuclear safety and radiation protection has recently been finalized for several projects partly or wholly dealing with regulatory assistance in the Western Balkans, which are of relevance to Montenegro or with environmental monitoring, namely:

- Assessment of the regulatory infrastructure in the field of nuclear safety and radiation protection; and
- Assessment of the needs and proposed actions in order to perform the monitoring of the radioactivity into the environment

Through IPA 2009 a regional project is in the way of implementation in the former Yugoslav Republic of Macedonia, Montenegro, and Kosovo in the field of management sealed radioactive sources, including radioactive lightning rods. This project is currently in the tendering phase.

3.7 Lessons learned

Through IPA 2009 a similar project consisting of supplying CETI with some other types of equipment has been programmed. The technical specifications of this equipment are currently being drafted so that procurement can take place during the second half of 2011. So far no difficulty has been recorded. The IAEA projects contributed to enhance the technical capability of CETI in a number of areas and notably on radioactive waste management. As a result of the close coordination with IAEA, there is no duplication of projects in this field. The IAEA did not point out any major difficulty in delivering technical assistance and equipment to CETI.

4. Indicative budget (amounts in EUR)

			SOURCES OF FUNDING									
			TOTAL EXP.RE	IPA EU CONTRIBUTION		NATIONAL CONTRIBUTION					PRIVATE CONTRIBUTION	
ACTIVITIES	IB (1)	INV (1)	EUR (a)=(b)+(c) +(d)	EU R (b)	%(2)	Total EUR (c)=(x)+(y)+ (z)	% (2)	Central EU R (x)	Regional/ Local EUR (y)	IFIs EUR (z)	EU R (d)	% (2)
Activity 1		x	145 000	60 000	41	85 000	59					
Contract supply - Lot 1			60 000	60 000	100	0	0					
Contract Supply - Benef			85 000	0	0	85 000	100					
Activity 2		x	40 000	30 000	75	10 000	25					
Contract supply - Lot 2			30 000	30 000	100	0	0					
Contract Supply - Benef			10 000	0	0	10 000	100					
Activity 3		x	90 000	90 000	100	0	0					
Contract supply - Lot 3			90 000	90 000	100	0	0					
Activity 4		x	120 000	120 000	100	0	0					
Contract supply - Lot 4			120 000	120 000	100	0	0					
TOTAL IB												
TOTAL INV			395 000	300 000	76	95 000	24					
TOTAL PROJECT			395 000	300 000	76	95 000	24					

Amounts net of VAT

(1) In the Activity row use "X" to identify whether IB or INV

(2) Expressed in % of the **Total** Expenditure (column (a))

5. Indicative Implementation Schedule (periods broken down per quarter)

Contracts	Start of Tendering	Signature of contract	Project Completion
Contracts Supply (all lots) – Activities 1.1, 2.1, 3 and 4	Q1 2012	Q2 2012	Q1 2013
Contract Supply – Activities 1.2, 1.3, 2.2	Q1 2012	Q2 2012	Q1 2013

6. Cross cutting issues

6.1 Equal Opportunity

The project will benefit both women and men through improvements in radiation protection in the medical sector and the industry. On all activities, both men and women will have equal opportunities to compete for contracts and to work on any related activities.

6.2 Environment

There are substantial environmental gains to Montenegro by accomplishment of this project, since a better monitoring of the radioactivity will improve the quality of the environment and further contributes to sustainable economical development.

6.3 Minorities

On all activities, minorities will have equal opportunities to compete for contracts and to work on any related activities.

ANNEXES

- I- Logical framework matrix in standard format
- II- Amounts (in EUR) contracted and disbursed per quarter for the project (EU funded)
- III- Description of Institutional Framework
- IV - Reference to laws, regulations and strategic documents
- V- Details per EU funded contract
- VI - CETI – Background Information
- VII - Endorsement Letter by the Ministry of the Environment

ANNEX I: Logical framework matrix in standard format

LOGFRAME PLANNING MATRIX FOR Project Fiche Strengthening Radiation Protection and Nuclear Safety in Montenegro through Capability Upgrading of Technical Support Institution		Programme name and number:	2011 IPA horizontal programme on nuclear safety and radiation protection (2011/023-388)
		Contracting period expires: 3 years following the date of conclusion of the financing agreement	Disbursement period expires : 1 year following the end date for execution of contracts
		Total budget : EUR 395 000	IPA budget: EUR 300 000
Overall objective	Objectively verifiable indicators	Sources of Verification	
To improve radiation protection and nuclear safety in Montenegro.	Periodic reports	CETI, EU-IPA missions, IAEA missions	
Project purpose	Objectively verifiable indicators	Sources of Verification	Assumptions
To upgrade the technical capabilities of the Centre for Ecotoxicological Research of Montenegro (CETI).	Periodic reports	CETI, EU-IPA missions,	There is endorsement by the Ministry of Tourism and Environmental Protection of Montenegro There is necessary organisational and personal infrastructure in CETI to accommodate the project

Results	Objectively verifiable indicators	Sources of Verification	Assumptions
<p><u>Activity 1:</u></p> <ul style="list-style-type: none"> Gamma dose rate (GDR) stations and their connection into a CETI-controlled network, purchased and installed in CETI's premises; Radiochemistry fume hood and related equipments (columns, dishes, mixer, evaporator, heaters, oven, balances, chemicals, standards) purchased and installed in CETI's premises. H3 electrolytic enrichment system purchased and installed in CETI's premises. <p><u>Activity 2:</u></p> <ul style="list-style-type: none"> Specialized vehicle (together with accessories) for the transportation of radioactive materials purchased and delivered in CETI's. <p><u>Activity 3:</u></p> <ul style="list-style-type: none"> TLD reader purchased and delivered to CETI Personal and environmental TLD cards purchased and delivered to CETI; CETI users of the equipment properly trained. <p><u>Activity 4:</u></p> <ul style="list-style-type: none"> Measuring equipment for QC/QA controls of radiology mammography, fluoroscopy, pulsed fluoroscopy, dental, panoramic dental and CT systems purchased and delivered to CETI CETI users of the equipment properly trained 	<p><u>Activity 1:</u></p> <p>Online accessibility of radiation dose rate within the country</p> <p>Decreasing of source of radioactive pollution of environment</p> <p><u>Activity 2:</u></p> <p>Number of radioactive sources transferred to CETI premises using the specialized</p> <p><u>Activity 3</u></p> <p>Improved databases of individual/collective and environmental exposures as a result of the use of new equipment;</p> <p>Number of certificate attendances for trainees</p> <p><u>Activity 4</u></p> <p>Decrease in worker, patient and public exposures as a result of the use of new equipment;</p> <p>Number of certificate attendances for trainees</p>	<p>CETI, EU-IPA missions, Periodic reports</p>	

Activities	Means	Costs	Assumptions
<p><i>Activity 1: Monitoring of the radioactivity in the environment and preparedness/ response to radiological/nuclear emergency situations</i> <u>Activity 1.1:</u></p> <ul style="list-style-type: none"> -Provision of 5 Gamma dose rate (GDR) stations and their connection into a CETI-controlled network, -Putting into operation distance monitoring network <p><u>Activity 1.2:</u> Provision of radiochemistry unit (fume hood, columns, dishes, mixer, evaporator, heaters, oven, balances, chemicals, standards)</p> <p><u>Activity 1.3:</u> Tritium electrolytic enrichment system for Liquid Scintillation Counter</p> <p><i>Activity 2: Radioactive waste storage and transportation of radioactive materials.</i> <u>Activity 2.1:</u> Provision of one specialized vehicle for the transportation of radioactive materials, including waste</p> <p><u>Activity 2.2:</u> Modification and equipping the specialized vehicle according to the need (10 000 EUR).</p> <p><i>Activity 3: Professional, patient, public and environmental exposure control including training of staff to use equipment</i> <u>Activity 3.1:</u> Provision of TLD reader</p> <p><u>Activity 3.2:</u> Provision of additional 1000 TLD cards (badges)</p>	<p>Supply contract (Lot 1)</p> <p>Supply contract fully financed by Beneficiary</p> <p>Supply contract fully financed by Beneficiary</p> <p>Supply contract (Lot 2)</p> <p>Supply contract fully financed by Beneficiary</p> <p>Supply contract (Lot 3)</p>	<p>EUR 60 000</p> <p>EUR 45 000</p> <p>EUR 40 000</p> <p>EUR 30 000</p> <p>EUR 10 000</p> <p>EUR 90 000</p>	

<p><u>Activity 3.3:</u> Provision of 200 TLD ring dosimeters</p>			
<p><u>Activity 3.4:</u> Provision of additional 100 TLD cards (badges) for environmental monitoring</p>			
<p>Activity 4: QC/QA controls of radiology mammography, fluoroscopy, pulsed fluoroscopy, dental, panoramic dental and CT systems, in particular:</p> <ul style="list-style-type: none"> • Multimeter for radiology mammography, fluoroscopy, pulsed fluoroscopy, dental, panoramic dental and CT systems • Densitometer • Sensitometer • Luminance meter • Illuminance meter • Set of dosimeters for various dose ranges and origins • Sets of ionization chambers and of electrometers • Resolution patterns • QC test objects • Set of phantoms for various exposition sources 	<p>Supply contract (Lot 4)</p>	<p>EUR 120 000</p>	

ANNEX II: Amounts (in EUR) contracted and disbursed by quarter for the project (EC funded)

Contracted	Q1 2012	Q2 2012	Q3 2012	Q4 2012	Q1 2013	Q2 2013	Q3 2013	Q4 2013
Contract Lot 1		60 000						
Contract Lot 2		30 000						
Contract Lot 3		90 000						
Contract Lot 4		120 000						
Cumulated		300 000	300 000	300 000	300 000	300 000	300 000	300 000
Disbursed								
Contract Lot 1		36 000			24 000			
Contract Lot 2		18 000			12 000			
Contract Lot 3		54 000			36 000			
Contract Lot 4		72 000			48 000			
Cumulated		180 000	180 000	180 000	300 000	300 000	300 000	300 000

ANNEX III. Reference to laws, regulations and strategic documents

International norms:

- [1] INTERNATIONAL ATOMIC ENERGY AGENCY International Basic Safety Standards for Protection against Ionizing Radiation and for the Safety of Radiation Sources. Safety Series 115, IAEA (1996)
- [2] INTERNATIONAL ATOMIC ENERGY AGENCY Legal and Governmental Infrastructure for Nuclear, Radiation, Radioactive Waste and Transport Safety. Safety Standards Series No. GS-R-1, IAEA (2000)
- [3] INTERNATIONAL ATOMIC ENERGY AGENCY Code of Conduct on the Safety and Security of Radioactive Sources. IAEA/CODEOC/2004
- [4] INTERNATIONAL ATOMIC ENERGY AGENCY Independence In Regulatory Decision Making International Nuclear Safety Advisory Group (INSAG) Report 17, IAEA (2003)
- [5] INTERNATIONAL ATOMIC ENERGY AGENCY Regulatory Control of Radiation Sources GS-G-1.5, 2004
- [6] INTERNATIONAL ATOMIC ENERGY AGENCY Legislation and Establishment of A Regulatory Authority for the Control Of Radiation Sources (draft)
- [7] INTERNATIONAL ATOMIC ENERGY AGENCY Application of the International Radiation Safety Standards in Nuclear Medicine (draft)
- [8] INTERNATIONAL ATOMIC ENERGY AGENCY Application of the International Radiation Safety Standards in Radiotherapy (draft)
- [9] INTERNATIONAL ATOMIC ENERGY AGENCY Application of the International Radiation Safety Standards in Diagnostic Radiology and Interventional Procedures using X-Rays (draft)
- [10] INTERNATIONAL ATOMIC ENERGY AGENCY Application of the International Radiation Safety Standards in Industrial Radiography and Industrial Irradiators (draft)
- [11] INTERNATIONAL ATOMIC ENERGY AGENCY Building Competence in Radiation Protection and the Safe Use of Radiation Sources, RS-G-1.4
- [12] INTERNATIONAL ATOMIC ENERGY AGENCY. Safety Report No 20: Training in Radiation Protection and the Safe Use of Radiation Sources
- [13] INTERNATIONAL ATOMIC ENERGY AGENCY Authorization for the Possession and Use of Radiation Sources (draft)
- [14] INTERNATIONAL ATOMIC ENERGY AGENCY Inspection of Radiation Sources and Enforcement (draft)
- [15] INTERNATIONAL ATOMIC ENERGY AGENCY Guidance on the Import and Export of Radioactive Sources. IAEA/GIERS/2005
- [16] INTERNATIONAL ATOMIC ENERGY AGENCY Quality Assurance within Regulatory Bodies. IAEA-TECDOC-1090 (1999).
- [17] INTERNATIONAL ORGANIZATION FOR STANDARDIZATION Quality Management Systems Fundamentals and Vocabulary. ISO 9000: 2000, Geneva (2000).
- [18] INTERNATIONAL ATOMIC ENERGY AGENCY TECDOC-1344 Categorisation of Radioactive Sources (2003)
- [19] INTERNATIONAL ATOMIC ENERGY AGENCY TECDOC-1355 Security of Radioactive Sources (2003)
- [20] INTERNATIONAL ATOMIC ENERGY AGENCY TECDOC 1344. IAEA, Vienna (2003). Notification and Authorization for the Possession and Use of Radiation Sources. IAEA, Vienna (Draft Safety Report).
- [21] INTERNATIONAL ATOMIC ENERGY AGENCY TECDOC 1388, Strengthening Control over Radioactive Sources in Authorised Use and Regaining Control of Orphan Sources. IAEA, Vienna (2004).
- [22] INTERNATIONAL ATOMIC ENERGY AGENCY, Preparedness and Response for a Nuclear or Radiological Emergency, Safety Series No. GS-R-2, IAEA Vienna (2002).
- [23] INTERNATIONAL ATOMIC ENERGY AGENCY, Regulations for the Safe Transport of Radioactive Materials, Safety Series No. TS-R-1, IAEA, Vienna (2000)
- [24] EUROPEAN FOUNDATION FOR QUALITY MANAGEMENT, The EFQM Excellence Model, Brussels (1999).

Domestic regulation:

1. Law on Protection Against Ionising Radiation, promulgated 4 October 1996 (Law 46/96).
2. Law on Organisation of State Bodies of June 2003 (Law 01/332/2).
3. Governmental Decree on the Organisation and Administration of State Bodies of 29 July 2004 (Decree 02/5046).
4. Governmental Decree on the Requirements to be met by Legal Entities for Taking Measurements for the Purpose of Appraising the Degree of Exposure to Ionising Radiation of the Persons Working with Radiation Sources, Patients and Population, Official Gazette of the FRY, No. 45/97 (5 September 1997).
5. Rules of Application of the Ionising Radiation Sources in Medicine and Basic Provisions, Official Gazette of the FRY, No. 32/98 (3 July 1998).
6. Rules Setting the Requirements to be Met by Legal Entities for Systematic Testing of the Radionuclide Content in the Environment, Official Gazette of the FRY, No. 32/98 (3 July 1998).
7. Rules Setting the Requirements for the Marketing and Use of Radioactive Materials, X-ray Machines and Other Devices that Generate Ionising Radiation, Official Gazette of the FRY, No. 32/98 (3 July 1998).
8. Rules Concerning the Limits of Exposure to Ionising Radiation, Official Gazette of the FRY, No. 32/98 (3 July 1998).
9. Rules Concerning the Limits of Radioactive Contamination of the Environment and the Modality of Decontamination, Official Gazette of the FRY, Nos. 9/99 and 19/99.
10. Rules Concerning the Requirements to be met by Legal Entities for Carrying Out Decontamination, Official Gazette of the FRY, Nos. 9/99 and 19/02/99.
11. Rules Concerning the Modality of and Requirements for the Collection, Safekeeping, Recording, Storing, Processing and Dumping Radioactive Materials, Official Gazette of the FRY, Nos. 9/99 and 19/02/89.

Strategic documents:

1. Council Decision on the Principles, Priorities and Conditions contained in the European Partnership with Montenegro, Council of the European Union, January 2007.
2. European Partnership Action Plan, Government of Montenegro, May 2007
3. Framework Agreement between the Government of Montenegro and the Commission of European Communities on the Rules for Co-operation Concerning ex-financial Assistance to Montenegro in the Framework of the Implementation of the Assistance under the Instrument for pre-accession Assistance (IPA), 2008.
4. Instrument for Pre-accession Assistance (IPA), Multi-Beneficiary, Multi Annual Indicative Planning Document (MIPD), 2009-2011, and 2011-2013.

ANNEX V Details per EU funded contract

Activities 1.1, 2.1, 3 and 4 of the project will be implemented through one to four supply contracts for a total amount of EUR 300 000 that will be concluded following a call for tenders (4 lots) launched in the first quarter of 2012.

Activities 1.1, 2.1, 3 and 4 of the project will be tendered, awarded and implemented in accordance with the "Practical Guide to contract procedures for EU external actions" ("Practical Guide").

An additional supply contract for an estimated amount of EUR 95 000 fully financed by the beneficiary organization will be launched in the first quarter of 2012 (parallel co-financing) to implement Activity 3.

Additional supply contract for an estimated amount of EUR 95 000 fully financed by the beneficiary organization will be concluded by CETI following a call for tenders to be launched in the first quarter of 2012 (parallel co-financing) by the beneficiary organisation to implement activities 1.2, 1.3 and 2.2 (complementary activities to lots 1 and 2).

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ANNEX VI. CETI – Background Information

Montenegro is declared “**ecological state**” by the first article of its Constitution, adopted in 1991 and reconfirmed by the new one (as independent country) in 2007. It means that all major decisions and steps taken in the country should be viewed from environmental preservation standpoint firstly. This has proved being much useful and efficient on several occasions when natural and ambient values were endangered by planning e.g. energetic objects (canyon river dams) or dirty industrial facilities, as well as when enlarging the percentage of the state territory under protection as national parks of nature.

The above idea of environmental protection as a basis for sustainable development is adopted as a political orientation - highlighting environment as the most valuable asset of the country. In supporting this orientation, **Centre for Eco-toxicological Research of Montenegro (CETI)** was established in 1998 by the decision of the Government of Montenegro. CETI is founded as a **public institution**, dealing with environmental monitoring and related activities – measurements, assessments, studies, consultancies, communication with media and public information, etc. Being a small country with limited resources, it was the idea that Montenegro concentrates in CETI most of its capabilities in environmental monitoring laboratories, instrumentation and staff. The task for CETI was to perform all environment monitoring programmes for the Ministry of Environment and to provide relevant professional support to and state institutions.

By unanimous opinion, CETI proved to have fulfilled by far the expectations set at the time. Even beyond – despite the fact it was conceived as a budgetary state institution – CETI gradually became self-sustainable, surviving on tiny local market of environmental monitoring and adjacent intellectual services. The government (still the owner) is among clients, with regular annual programs of environmental pollution monitoring.

Not surprisingly – much due to the official ecological attitudes mentioned – sector of tourism in Montenegro is in huge expansion (one of the fastest growing in the world and representing country’s major revenue). For this reason, environmental protection and tourism are situated within the same ministry. Also in this sense, the director of CETI is being appointed by the Government, upon the proposal of the Minister of tourism and environmental protection.

Upon regaining its independence in 2006, Montenegro committed itself to accessing the EU. Obligations set in AP, NAA, EP, SAA and MIPD were accepted and National Strategy for Sustainable Development adopted. Recognizing these tasks, CETI participates on common basis in developing regulatory infrastructure (laws and regulations) for environmental protection in the country. In the near future, CETI will likely be designate as technical support organization for Environmental protection agency of Montenegro (EPAM), radiation protection services included (establishment of EPAM is decisively supported by the European Agency for Reconstruction and Development, EARD).

Another cornerstone to be emphasized reflects CETI’s support to the Ministry of Agriculture, Forestry and Water Resources. Namely, agriculture is another major direction of the sustainable development in Montenegro - healthy and biological food production being particularly in focus. Following accreditations and certificates recently obtained, CETI is entrusted by the Ministry with toxicological control of various segments in this complex process, being designated as national reference laboratory for food residues control. It is intended that these activities gradually become more and more important in CETI’s practice.

With Ministry of health, labour and social welfare CETI cooperates on developing Strategy of diminishing environmental pollution sources in Montenegro, following the task given by the Government. With the Ministry of interior, cooperation is about combating illicit trafficking of radioactive and nuclear materials and dealing with radiological and nuclear

emergency situations. In the future, cooperation with both ministries should extend to other types of technical support services, particularly in analytical field.

Consequently, **CETI can be regarded as one of the essential stakeholders in national strategy towards environmental protection and sustainable economical development based upon.**

Besides professional competence, rational organization, devotion of the staff and hard work, the orders of the day in CETI practice include complying with international norms and commitment to highest quality standards. It is open and transparent in its activities.

Current performance capabilities of CETI

Within its scope of activities, CETI is currently capable of covering measurements, monitoring and assessments of practically all segments of the environment:

- Air
- waters (incl. rivers, lakes, sea, underground, potable and waste waters)
- soil and sediments
- biosphere (bioindicators)
- waste (incl. solid, liquid and gaseous ones)
- living and working environment
- production, import, export and trade of human food and animal forage
- construction materials and various consumables
- accidental and emergency situations related to environmental pollution.

In the above, the following parameters can/are being determined up to a high degree of completeness:

- chemical and physical composition, incl. trace elements
- inorganic and organic pollutants/toxicants
- radioactivity and ionizing radiation.

In doing so, CETI disposes of modern equipment, however amortized to a pretty high degree (most of it was purchased when CETI was founded, in late 90's). Staff, some 70 people, is well qualified (most with university degree, however not many with M.Sc. and Ph.D.).

CETI has ISO 9001:2000 certificate from the certification Body of TUV Management Service GmbH, TUV SUD Gruppe, Munich, Germany and is accredited under ISO/IEC 17025 standard from JUAT accreditation body from Belgrade, Serbia). An IAEA expert mission in 2006 evaluated CETI laboratories with 9.2 (out of 10) for managerial requirements and 9.5 for technical ones.

As to finances, CETI is in a somewhat strange situation. Although 100% owned by the Government, it is fully self sustainable, earning its complete revenues on the market, with no contribution from the state budget. Even the monitoring services performed for the Government (Ministry of the Environment) are subject to market conditions, following an open bidding procedure. Major problems encountered include small and limited market of services in Montenegro, closed markets in the neighbouring countries (difficult to penetrate) and imminent renewing/upgrading of costly equipment.

Department of Radiation Protection and Monitoring

Department of Radiation Protection and Monitoring (DRPM) is in charge of the following:

- monitoring of the radioactivity in the environment (regular monitoring programs of the Government, followed by yearly reports), including gamma-spectrometry, radon, dose-rate and other parameters measurements in air, water, soil, etc. samples at a number of selected locations in the country

- personal and workplace dosimetry
- QC/QA of radiation sources in medicine
- radioactivity control of export/import goods and consumables, including food
- management of radioactive waste storage (low and medium activity)
- national technical support centre in radiological emergency situations

In effectuating these activities, CETI-DRPM disposes of modern equipment, decent laboratory premises and qualified staff. Nuclear spectrometry laboratory is not only by far the most advanced one in Montenegro – it can be regarded as a regional centre of excellence as well. Two low background stationary HPGe gamma-spectrometry systems are in full operation most of the time. There is also a portable HPGe system and a number of in-house and portable NaI detector systems. There is a recently acquired alpha/beta spectrometry system and a multi-sample scintillation counter. Radon measurements are being routinely performed by several standard techniques. There is a modern thermoluminescent dosimetry (TLD) reader system, the only of the kind in the country. A basic radiological emergency kit is also available. CETI disposes of necessary standards and calibration sources for all the above equipment/activities.

In 2000-2002 CETI completed national project of Cape Arza decontamination from depleted uranium (DU). Two UNEP missions late on reported about high professional standards with which this task was done.

In the short and medium term (2010-2013) it is the plan of CETI to further expand and upgrade the above activities, in particular:

- licensing radioactive waste storage and its full operation
- radiation sources in Montenegro database (in RAIS format), including both operational and disused sources
- completion of QC/QA services for medical radiation sources, including both existing and future (planned) medical applications: diagnostic radiology, nuclear medicine, interventional radiology, radiotherapy, brachytherapy, blood products and medical equipment/consumables gamma-sterilization, etc.
- completion of nuclear spectrometry services, in particular for radioactivity monitoring in the environment, by introducing a radio-chemistry unit
- full coverage of professionally exposed workers in Montenegro by TLD personal dosimetry monitoring completion of CETI capabilities as a regulatory body technical support organization (TSO), having in mind both existing regulatory system (competences are within the two ministries: of health and of the environment) and future one (environmental protection agency, EPA)
- enlarging laboratory premises (third floor of the CETI building, currently not used by CETI)
- creating distance radioactivity monitoring system by a network of distance units
- creating conditions for legally/technically proper transportation of radioactive sources in the country (including transit), complying with international norms.
- upgrading the level of ‘nuclear law’ knowledge of the staff, both for in-house purposes and for advising/services to various stakeholders (government, regulatory authority, users, workers, patients, public)
- certification/accreditation of all methods/activities practiced

ANNEX VII: Endorsement Letter by the Ministry of the Environment

The letter will be sent additionally, when Minister signed the letter.