

Standard Summary Project Fiche**1. Identification**

Project Title	Upgrading the systems for the on- and off-line monitoring of radioactivity in the environment in Croatia in regular and emergency situations
Cris Decision number	2011/023-389
Project no.	5
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 435 000
EU contribution	EUR 374 250
EU Delegation in charge/Responsible Unit	Unit D3 - Regional Programmes DG Enlargement
Management mode	Decentralised Central Finance and Contracting Agency Ms Marija Tufekčić Programme Authorising Officer Ulica grada Vukovara 284 10000 Zagreb, Croatia
Implementing modality	Project
Project implementation type	Bilateral
Zone Benefiting from the action/Beneficiaries	Croatia
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 ensure better protection of man and the environment against ionising radiation in line with Article 35 of the Euratom Treaty.

2.2 Project purpose:

Upgrade the system for on- and off-line monitoring of the environment in the Republic of Croatia necessary under regular and emergency situations.

2.3 Link with AP/NPAA / EP/ SAA

European Commission Avis (April 2004)

Chapter 14 (Energy)

“EU energy policy objectives include the improvement of competitiveness, security of energy supplies and the protection of the environment.

In the area of nuclear safeguards, Croatia has signed and ratified a Comprehensive Safeguard Agreement and an Additional Protocol to this Agreement with the International Atomic Energy Agency (IAEA). Upon accession, the Euratom Treaty would be directly applicable and Croatia’s nuclear operators would have to report all safeguards related information to the Commission, which would in turn report to the IAEA.

Conclusion

Croatia will have to make further efforts to align its legislation with the *acquis* in this area and to effectively implement and enforce it, including Euratom provisions, in the medium term.”

Chapter 22 (Environment)

“Regarding nuclear safety and radiation protection, Croatia has established a legal framework for different aspects concerning the basic safety standards, medical exposure and emergency preparedness. ... Due to the lack of administrative capacity, the direct implementation of Articles 33 to 37 of the Euratom Treaty and of the arrangements for emergency preparedness would pose significant problems. Croatia therefore needs to establish appropriate regulatory bodies, competent radiation protection authorities and special advisory committees.”

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.

² C(2011)4179, 20.06.2011.

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:

- Implementation of monitoring programmes for measuring the occurrence of radioactivity in the environment and establishing of methodologies for public dose assessment.”

In addition, in the Multi-Beneficiary Multi-annual Indicative Planning Document (MIPD) 2009-2011³, section 2.3.3.11 – Nuclear Safety and Radiation Protection, the following objectives and expected results are listed:

“Objectives

Enhance the technical competence and administrative capacity of the national radiation safety authorities and other relevant public organisations; Contribute to solving the most urgent radiological issues that confront the IPA beneficiaries.

Expected results

Improved efficiency and effectiveness of relevant public administrations (radiation protection authorities, nuclear safety authorities and other publicly funded bodies); Greater competence and awareness among Beneficiary officials on how to implement EU *acquis*; Greater availability of instruments to combat illicit trafficking of nuclear materials and radiation sources; More early warning and efficient emergency systems in place; Reduction of the radiation risks for the members of the public; Further alignment of the management practices of radioactive materials with EU best practices in particular in the field of radioactive waste management and decommissioning; Better monitoring and cleaning up of contaminated territories with depleted uranium.“

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:

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.

Croatia (as part of former Yugoslavia) has developed an extensive environmental monitoring programme from the early 1960s onwards, which is still operational and is covering all different media of biosphere (air, soil, precipitation, surface waters and

³ C(2009)4518, 16.06.2009.

also drinking water, foodstuffs and feeding stuffs). However, 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 Kosovo*”⁴.

Upgrade is needed in on-line and in off-line monitoring systems as follows:

3.1.1. Ambient dose rate network

The existing ambient dose rate network which consists of 25 automatic gamma dose rate (GDR) stations, 2 on-line aerosol monitors with additional meteorological sensors were, until the establishment of the new regulatory body - State Office for Radiological and Nuclear Safety (SORNS), under the responsibility of the State Office for Nuclear Safety and served only as an early warning system (EWS) for the nuclear emergency purposes. It is planned that the existing GDR-EWS in the future should be used in regular environmental monitoring as well. Taking into account the population density and in accordance to the practice in neighboring countries as a compromise between warning and delineation functionality, the mean distance of 60 km for ambient dose rate network was recommended by the experts within the 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, and Serbia, as well as Kosovo*”. Therefore, to fulfill these requirements, additional 8 stations (probes and data loggers) should be installed and integrated into the existing network to form the network of 33 stations with special attention to the vicinity of NPPs Krško and Paks. The need for the additional GDR stations was as well recommended within the Final Technical Report “*Investigations of the opportunities for the further Development of the Croatian Early Warning System.*” within the Phare 2006 Project “*Support to the State Office for Nuclear Safety in Upgrading and Modernization of the Croatian Early Warning System*”.

The State Office for Radiological and Nuclear Safety will decide upon locations for new GDR stations taking into account requirements relevant for effective ambient dose rate network. Furthermore, in cases of existing GDR stations where standard site criteria were not achieved, within the scope of the proposed IPA 2011 project, deviation factors quantifying irregularities of the locations should be analyzed and appropriate correction factors determined to standardize GDR station measurements with EU requirements for the purpose of environmental monitoring.

3.1.2. On-line monitoring in surface waters

Since there are no on-line monitors in rivers downstream the two NPPs in the Croatian vicinity, Krško (in Slovenia, 10 km from the Croatian border) and Paks (in Hungary, 70 km from the north-east Croatian border), on-line continuous monitoring systems of radioactive effluents in the surface water of these two rivers was recommended by the expert team within the IPA 2007 Project “*Assessment of the needs and proposed actions in order to perform the monitoring of the radioactivity in the environment in*

⁴ under UNSCR 1244/1999.

Albania, Bosnia and Herzegovina, Croatia, the former Yugoslav Republic of Macedonia, Montenegro, Serbia, as well as Kosovo”) at several NPP downstream locations (3 on each river) for permanent observation of the river status. Taking into account that these activities were scored priority 2 by the abovementioned Project, the complexity required to implement these activities at the given number of stations, as well as the funds needed for their maintenance, it is planned to start the process with two stations which would serve as a pilot system. Maintenance costs will depend on the type of equipment selected and will be covered by SORNS.

The State Office for Radiological and Nuclear Safety will decide upon locations at Sava and/or Danube river taking into account the relevant radiological protection site criteria/requirements as well as the site characteristics for the most effective monitoring.

3.1.3. Off-line monitoring

Given that at the moment there is no measurement equipment for alpha spectrometry of low activities in samples obtained from off-line sampling, acquisition of a low level alpha spectrometer is recommended by the expert team within the IPA 2007 Project “*Assessment of the needs and proposed actions in order to perform the monitoring of the radioactivity into the environment in Albania, Bosnia and Herzegovina, Croatia, the former Yugoslav Republic of Macedonia, Montenegro, Serbia, as well as Kosovo*”. This equipment is needed for analysis of samples taken for national monitoring to fulfill the European Commission recommendations to Article 35/36 of the Euratom Treaty. As SORNS does not have technical conditions for such equipment and is not accredited for this type of measurements, it is proposed that a low-level alpha spectrometer is purchased under this IPA 2011 project and located at the Laboratory for radioecology at Rudjer Bošković Institute, one of the accredited public institution’s laboratories which perform environmental monitoring in accordance to existing regulations.

3.1.4. Mobile systems

Mobile systems are used mostly in the case of emergency when fast information should be available. Concerning the vicinity of two NPPs, it is recommended by the expert team within the IPA 2007 Project “*Assessment of the needs and proposed actions in order to perform the monitoring of the radioactivity into the environment in Albania, Bosnia and Herzegovina, Croatia, the former Yugoslav Republic of Macedonia, Montenegro, Serbia, as well as Kosovo*” to purchase one vehicle based mobile in-situ system extended by the additional mobile equipment. This type of equipment can also be used in case of routine operation to perform in-situ gamma spectrometric measurements to determine the background activity concentration at specific predefined locations. Therefore, the vehicle equipped with mobile monitoring system will be delivered on utilization to the Institute for Medical Research and Occupational Health (IMROH), Zagreb, one of the accredited technical services that perform environmental monitoring under regular and in emergency situations. In that way everyday use of the equipment will be secured.

Regarding maintenance of the above mentioned equipment, potential contract(s) will have a warranty period clause which will require any additional service from the contractor in that period. In general, maintenance of the equipment (in financial and technical terms) is the responsibility of the project beneficiary and it will be the duty of SORNS. Understandably, the maintaining costs depend on the type of equipment chosen, but in order to secure that maintenance costs will fit the available and feasible

limits different options are being applied such as: the limited number of surface water monitoring stations that will serve as pilot projects and IMROH in the case of the mobile vehicle, and IRB in the case of low-level alpha spectrometer.

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

Assessment of project impact and catalytic effect - This project will upgrade existing environmental monitoring and ensure better protection of man and the environment against ionizing radiation in Croatia and ensure full compliance with Articles 35 of the Euratom Treaty. Implementation of project activities, without IPA funds would not be possible at the moment.

Cross border impact - Envisaged project will ensure adequate monitoring of environmental radioactivity in routine and emergency, which will contribute to the radiological safety of the whole region.

Sustainability – Staff of beneficiary institutions will be trained for proper use of the equipment, which will be used adequately and respecting all technical requirements.

- The equipment for on-line monitoring will be in everyday use (operated by trained personnel), continuously sending data to the data centre providing an overview of activity levels in normal cases as well as give fast information in case of enhanced activities. Data from the data centre at SORNS will be exported to international systems managed by the European Commission and will be publicly available as well. Activities needed to interface/extension of the existing IT infrastructure to establish a complete IT infrastructure for the on-line and off-line monitoring network, SORNS/Croatia will finance from its own sources.
- The low level gamma spectrometer will be located at the Laboratory for radioecology at Rudjer Bošković Institute, one of the accredited public institution's laboratories which perform environmental monitoring which will send reports on measured activities based on requirements prescribed in regulations and procedures.
- Mobile system will be used by accredited team at IMROH with regular training under the emergency program. Equipment will be tested on a monthly basis. In routine, the mobile in-situ system will be used to perform in-situ gamma spectrometric measurements to determine the background activity concentration at specific predefined locations.

3.3 Results and measurable indicators:

Result 1 – Equipment delivered, installed and tested on dedicated locations and into vehicle and staff trained to work with the equipment.

Measurable indicators for result 1:

- Equipment delivered, installed, in operation.
- Number of trainings for stakeholders institutions and number of employees who received training.

Result 2 – Determined/generated correction factors for all GDR stations for the purpose of environmental monitoring.

Measurable indicators for result 1: Verified and standardized GDR stations.

3.4 Activities:

Activity 1. Purchase, installation and commissioning of equipment – Contract 1– Supply

Activity 1.1 - Procurement of equipment:

- GDR stations (8), compatible with the existing EWS system.
- on-line monitoring systems for surface water (2)
- Vehicle (1) including mobile equipment:
- vehicle based in-situ system (1): HPGE detector, digital MCA(8K) with digital signal processing electronics, GPS receiver for precise positioning, laptop with GSM/UMTS interface for data transfer
 - gamma pager (3)
 - combined α , β , γ surface contamination detector (1)
 - spectrometer for fast radionuclide detection and identification (1)
 - neutron dose rate detector (1)
 - meteorological equipment (1)
- alpha spectrometer (1)

Activity 1.2 – Installation (including preparatory works for installation) and testing (commissioning) of equipment at identified sites.

Activity 1.3 – Installation and testing (commissioning) of equipment in the vehicle.

Activity 1.4 – Training of stakeholders to work with and maintain the new equipment.

Activity 2. Verification of existing GDR stations regarding standard site criteria and generation of corrective/deviation factors if needed to standardize GDR station measurements with EU requirements for environmental monitoring. Contract 2 - Service

2.1. Verification of existing GDR stations standard site criteria fulfilment

2.2. Verification of new installed GDR stations including Quality Checking and Quality Assurance

2.3. Generation of corrective /deviation factors for standardization of all GDR stations with EU requirements

2.4 Project management

3.5 Conditionality and sequencing

Sequencing - Project component which refers to procurement of equipment will be conducted as the first activity in the project. Activity 2 (service contract) will start after the supply contract.

3.6 Linked activities

Prior Regional or Multi-beneficiary Programmes (e.g. IPA, CARDS, PHARE) IPA centralised programmes; Part II of the Horizontal Programme on Nuclear Safety and Radiation Protection IPA centralised programmes;

Phare 2006 project entitled “*Support to the State Office for Nuclear Safety in Upgrading and Modernization of the Croatian Early Warning System*” improved the Croatian Early Warning System. This early warning system with some upgrading and extension can be used in environmental monitoring. Methods for its upgrade and extension are proposed in this Project Fiche i.e. developing of appropriate correction factors for existing monitoring stations that do not meet site criteria, and addition of 10 new on-line gamma dose rate monitoring stations.

IPA 2007 regional project entitled “*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 Kosovo*” had an overall objective to improve radiation protection in the Beneficiaries in line with Article 35 of the Euratom Treaty through achieving the following goals: “To analyze current practices and regulations concerning the "permanent control of the level of radioactivity in the atmosphere, water and soil" as stipulated in Article 35 of the Euratom Treaty in the Beneficiaries in order to identify possible areas for which improvement and investment would be desirable.” Conclusions and recommendations of this project were used as a basis for outlining this IPA 2011 project and were quoted in the paragraph 3.1 of this project fiche.

Under the Phare 2006 project “*Border Control of Nuclear and other Radioactive Materials with Stationary Portal Monitors practices in Croatia*”, two vehicles were purchased for the purpose of detection of nuclear and other radioactive materials, and were equipped with portal monitors by using Croatian budgetary funds. The whole equipment obtained through this project was delivered on utilization to the Customs Authority and is in everyday use. Furthermore, vehicles were equipped with fixed monitors which occupy a major part of the vehicles and prevent installation of new equipment.

3.7 Lessons learned

The lessons learned from the previous EU projects were mainly related with the need for preciseness in preparation of the necessary documentation, respecting deadlines and necessity of establishment of close cooperation with relevant institutions. Conclusions and recommendations from all on-going EU projects have been taken into account during the preparation phase and design of this project by identifying the managerial and other users' needs and from the methodological, organisational and technical aspect.

4. Indicative Budget (amounts in EUR)

			SOURCES OF FUNDING										
			TOTAL EXP.RE	TOTAL PUBLIC EXP.RE	IPA EU CONTRIBUTION		NATIONAL PUBLIC CONTRIBUTION					PRIVATE CONTRIBUTION	
ACTIVITIES	IB (1)	INV (1)	EUR (a)=(b)+(e)	EUR (b)=(c)+(d)	EUR (c)	% (2)	Total EUR (d)=(x)+(y)+(z)	% (2)	Central EUR (x)	Regional/ Local EUR (y)	IFIs EUR (z)	EUR (e)	% (3)
Activity 1		X	365 000	365 000	310 250	85	54 750	15					
Contract 1	-	-	365 000	365 000	310 250	85	54 750	15					-
Activity 2	X		70 000	70 000	64 000	91	6 000	9					
Contract 2	-	-	70 000	70 000	64 000	91	6 000	9					-
TOTAL IB			70 000	70 000	64 000	91	6 000	9					
TOTAL INV			365 000	365 000	310 250	85	54 750	15					
TOTAL PROJECT			435 000	435 000	374 250	86	60 750	14					

NOTE: DO NOT MIX IB AND INV IN THE SAME ACTIVITY ROW. USE SEPARATE ROW

Amounts net of VAT

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

(2) Expressed in % of the **Public** Expenditure (column (b))

(3) 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
Contract 1 - Supply	Q3 2012	Q2 2013	Q2 2015
Contract 2 - TA	Q2 2013	Q1 2014	Q1 2015

6. Cross cutting issues

6.1 Equal Opportunity

Based on the fundamental principles of promoting equality and combating discrimination, participation in the project will be guaranteed on the basis of equal access regardless of sex, racial or ethnic origin, religion or belief, disability, age or sexual orientation.

All contractors shall be requested to provide monitoring data recording the participation of men and women in terms of expert inputs (in days) and of trainees benefiting under the project (in days) as an integral component of all project progress reports.

Participation will be open to both: female and male personnel. Records on staff participating in training and other project activities (e.g. project progress reports) will reflect this statement.

6.2 Environment

By accomplishing the project purpose, systems for monitoring radioactivity in the environment in Croatia will be improved. The system will generate precise data on radioactivity in the environment, and enable appropriate planning and response activities.

6.3 Minorities

Based on the fundamental principles of promoting equality and combating discrimination, participation in the project will be guaranteed on the basis of equal opportunity for minorities.

ANNEXES

- I- Log frame in Standard Format
- II- Amounts contracted and disbursed per quarter over the full duration of the project
- III Description of Institutional Framework
- IV Related laws, regulations and strategic documents
- V Details per EU funded contract

ANNEX I: Logical framework matrix in standard format

LOGFRAME PLANNING MATRIX FOR Project Fiche	Programme name and number	2011 IPA horizontal programme on nuclear safety and radiation protection (2011/023-389)
Upgrading the systems for the on- and off-line monitoring of radioactivity in the environment in Croatia in regular and emergency situations	Contracting period expires:	Disbursement period expires:
	3 years following the end date of the conclusion of the financing agreement Total budget EUR 435 000	1 year following the end date for execution of contracts IPA budget: EUR 374 250

Overall objective	Objectively verifiable indicators	Sources of Verification	
To ensure better protection of man and the environment against ionising radiation in line with Article 35 of the Euratom Treaty	Environmental monitoring reports	<ul style="list-style-type: none"> Project final report 	
Project purpose Upgrade the system for on- and off-line monitoring of the environment in the Republic of Croatia necessary to comply with the Article 35 of the Euratom Treaty	Objectively verifiable indicators On-line data on web Environmental monitoring reports	Sources of Verification Project final report SORNS Annual report Set up and operational equipment On-line data on web	Assumptions
Results	Objectively verifiable indicators	Sources of Verification	Assumptions
Result 1 – Equipment delivered, installed and tested on dedicated locations and into vehicle; staff trained to work with the equipment	Equipment delivered , installed and tested; number of trainings for stakeholders; number of employees who received training	Project Progress report	All necessary permissions/licences obtained, contracts with holders of locations signed, agreements/contracts with organisations /people on maintaining equipment signed
Result 2 – Determined/generated correction factors for all GDR stations for the purpose of environmental monitoring	Report on verified locations including correction factors needed	Report Standardized GDR stations	
Activities	Means	Costs	Assumptions
Activity 1. Purchase and installation of the equipment Activity 1.1 - Procurement of equipment Activity 1.2 - Installation (including preparation for installation) and testing of equipment at identified sites Activity 1.3 - Installation and testing of the equipment in the vehicle Activity 1.4 – Training of stakeholders to work with and maintain the new equipment	Activity 1 <u>Contract 1– Supply</u>	EUR 365 000	Locations selected and agreements for usage of locations signed All stakeholders willing to participate Sufficient number of staff in stakeholders institutions available for training activities
Activity 2. Verification of existing GDR stations regarding standard site criteria and generation of corrective / deviation factors if needed to standardize GDR stations measurements with EU requirements for environmental monitoring	Activity 2 - <u>Contract 2 - Service</u>	EUR 70 000	

2011 IPA Horizontal Programme on Nuclear Safety and Radiation Protection – PF5 - Croatia

2.1.Verification of existing GDR stations standard site criteria fulfilment 2.2.Verification of new installed GDR stations 2.3.Generation of corrective /deviation factors for standardization of all GDR stations with EU requirements			
---	--	--	--

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

Contracted	Q1 2013	Q2 2013	Q3 2013	Q4 2013	Q1 2014	Q2 2014	Q3 2014	Q4 2014	Q1 2015	Q2 2015
Contract 1		365 000								
Contract 2					70 000					
Cumulated		365 000	365 000	365 000	435 000	435 000	435 000	435 000	435 000	435 000
Disbursed										
Contract 1		219 000								146 000
Contract 2					46 000				24 000	
Cumulated		219 000	219 000	219 000	265 000	265 000	265 000	265 000	289 000	435 000

ANNEX III: Description of Institutional Framework

The Beneficiary organization in Croatia will be the State Office for Radiological and Nuclear safety
The legal framework is defined on the Act on radiological and nuclear safety (OG 28/10). It performs the following tasks:

- approve the carrying out of nuclear activities,
- approve the carrying out of practices involving sources of ionising radiation,
- approve procurement, import, export, transport and transit of ionising radiation sources,
- authorise the use of ionising radiation sources,
- conduct independent safety analyses and issue decisions or certificates regarding the location, design, construction, operation and decommissioning of a facility in which a nuclear activity is to be performed,
- take part in the procedure for issuing location permits, building permits, permits for removal and in the procedure for issuing use permits for structures that accommodate sources of ionising radiation or in which practices involving sources of ionising radiation are carried out in accordance with *lex specialis*,
- approve and supervise the professional operations of authorised technical services and authorised experts for nuclear safety,
- organise and supervise, and where necessary also carry out tests on the presence of the type and intensity of ionising radiation in the environment, food and feed, medicinal products and general use products under regular conditions as well as in cases of suspected emergency,
- keep records on the licences, approvals, decisions and certificates which it has issued within the scope of its authority, and maintain and supervise records on ionising radiation sources, licensees and licence holders, beneficiaries, exposed workers, level of irradiation of exposed workers as well as the level of irradiation of persons subject to medical exposure and of other persons,
- carry out inspections to ensure the implementation of the provisions of this Act and regulations adopted on the basis thereof,
- elaborate technical platforms for teaching curricula and programmes for regular and additional education as well as for renewal of knowledge in the field of protection against ionising radiation,
- ensure expert assistance in implementing the national plan and programme for procedures in the event of a nuclear accident and emergencies connected with sources of ionising radiation,
- inform the mass media, competent bodies, organisations, associations and international institutions on emergencies connected with sources of ionising radiation,
- provide expert assistance and cooperation in activities for preventing illicit trafficking in nuclear and other radioactive material to state administration bodies competent for such activities,
- monitor safety conditions at nuclear power plants in the region and carries out assessments of the threat of nuclear accidents there, especially in the Krško Nuclear Power Plant in Slovenia and the Paks Nuclear Power Plant in Hungary,
- provide dosimetric assessments of exposure to ionising radiation of exposed workers, of the population from medical exposure and from exposure to ionising radiation originating from environmental radionuclides,
- fulfil the obligations which the Republic of Croatia has assumed through international conventions and bilateral agreements concerning protection against ionising radiation, nuclear safety and the application of protective measures aimed at the non-proliferation of nuclear weapons,
- cooperate with international and domestic organisations and associations in the area of protection against ionising radiation and nuclear safety, and appoint its own expert

representatives to take part in the work of such organisations and associations or to monitor their work,

- coordinate technical cooperation with the International Atomic Energy Agency for all participants from the Republic of Croatia,
- stimulate and support scientific and research and development activities, encourage professional, statistic and other research in accordance with the demands and requirements of the development of nuclear safety and protection against ionising radiation in the Republic of Croatia,
- issue instructions for implementing international recommendations and standards in the area of protection against ionising radiation and nuclear safety and design the standards and methods in monitoring the state of protection against ionising radiation,
- carry out other activities under its competence pursuant to this Act, regulations adopted on the basis thereof, and other regulations.

SORNS is organised into three Sectors, the Sector for Ionising Radiation Protection, the Sector for Nuclear safety and the Sector for the Emergency.

At the moment SORNS has 24 employees. To ensure successful implementation of the project and all of its foreseen activities Project Implementation Unit is established and its members received Project Cycle Management and other relevant training.

ANNEX IV- Reference to laws, regulations and strategic documents:

- Nuclear Safety and Radiation Protection action of the Multi-beneficiary MIPD 2009-2011 and 2011-2013;
- Act on radiological and nuclear safety (OG 28/10);
- Ordinance on the conditions, manner, places and deadlines for systematic testing and monitoring of the type and activity of radioactive substances in the air, soil, the sea, rivers, lakes, ground waters, solid and liquid precipitation, drinking water, foodstuffs and general use products and dwelling and working spaces(OG 60/08);
- IPA 2007 Project Final report “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 Kosovo;
- Phare 2006 Project Final Technical Report “Support to the State Office for Nuclear Safety in Upgrading and Modernization of the Croatian Early Warning System” Investigations of the opportunities for the further Development of the Croatian Early Warning System.

ANNEX V: Details per EU funded contract

The following two contracts are expected to be concluded to implement this project:

Contract 1 - Supply contract for an EU contribution of EUR 416 500 following a tender launched in the third quarter of 2012.

- **GDR stations**
Probe requirements: GDR range: 0.01 μ Sv/h. 1 Sv/h; for the photons with energies in the range between 60 keV and 1300 keV, the systematic uncertainty should not exceed 40 %. temperature range: -40⁰C – 60⁰C.
- **On-line monitoring systems for surface water**
Automatic river water monitoring system with GDR and spectroscopy measurements.
- **Mobile equipment including vehicle**
 - vehicle based in-situ system
 - gamma pager
 - combined α , β , γ surface contamination detector
 - spectrometer for fast radionuclide detection and identification
 - neutron dose detector
- **Alpha spectrometer**
Standard system for alpha spectrometric measurements for low level measurements with minimum 2, standard 6 measuring chambers with: Low background detectors (e. g. PIPS-detectors); diameter of the detectors depends on the diameter of the samples; Voltage supply, amplifier and multi channel analyzer; Vacuum control, PC/Monitor and printer; Software for measurement control, acquisition, evaluation; alpha spectra (certified) with all necessary modules for calibration

Contract 2 - Service contract for an EU contribution of EUR 64 000 following a tender launched in the second quarter of 2013.

This project will be implemented by the State Office for Radiological and Nuclear Safety. The implementation of this project will be decentralised.

Lead Beneficiary:

State Office for Radiological and Nuclear Safety (SORNS)

Frankopanska 11, HR - 10020 ZAGREB

Responsible person:

Doc. dr. sc. Dragan Kubelka, Director General of SORNS and SPO

Phone:+385 14881 770

Fax:+385 14881 780

e-mail: dragan.kubelka@dzrns.hr

Project partners: Rudjer Boskovic Institute (RBI), Institute for Medical Research and Occupational Health (IMROH), Zagreb