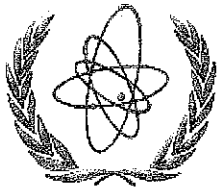
COUNCIL OF MINISTERS
BOSNIA AND HERZEGOVINA



INTERNATIONAL ATOMIC
ENERGY AGENCY

COUNTRY PROGRAMME FRAMEWORK

2015 - 2019

On behalf of the Government:

Mr. Emir Dizdarevic

Director
State Regulatory Agency for Radiation and Nuclear Safety

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Date

On behalf of the International Atomic Energy Agency:

Mr. Kwaku Aning

Deputy Director General
Head, Department of Technical Cooperation

09-02-2015

Date

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I. INTRODUCTION

The main objective of the Country Programme Framework (CPF) document for Bosnia and Herzegovina (BOH) is to identify and agree on areas for Technical Cooperation (TC) with the IAEA that are of high priority. It is intended to respond to major needs of the country and support the development of a TC programme that will have a well-defined impact, be sustainable, enjoy strong government support and commitment, and be of the type where the Agency can make a significant contribution.

The endorsement of the CPF document, while not legally binding, demonstrates a common commitment and shared responsibility for the implementation of a sustainable mid to long-term technical cooperation strategy.

The first CPF document for BOH was signed in January 2004. The current revision of this document is based on discussions within the State Regulatory Agency for Radiation and Nuclear Safety (SRARNS), as the main partner for all TC matters with the IAEA, together with other relevant governmental bodies and institutions, such as: the Ministry of Foreign Affairs of BOH, the Ministry of Civil Affairs of BOH, the Ministry of Health of Republika Srpska, the Ministry of Health of the Federation of BOH, the Clinical Centers and the two Public Health Institutes in BOH.

I.1 Country Profile

A. Historical Overview

Bosnia and Herzegovina was one of the republics of the former Socialist Federal Republic of Yugoslavia (SFRY). In the process of the disintegration of the SFRY, after multi-party elections in November 1990 and after a referendum on independence that was held on 29 February and 1 March 1992, the parliament formally declared the independence of BOH on 3 March 1992. Bosnia and Herzegovina applied for membership in the United Nations (UN) and on 20 May 1992, the UN Security Council in its resolution 755 (S/RES/755) recommended to the UN General Assembly to admit BOH to the UN.

Unlike the other republics of the former SFRY, which were generally composed of a dominant nationality, the country was a tangle of Bosniaks (about 44%), Serbs (31%), and Croats (17%) plus other minorities, as well as various religions (40% Muslims, 31% Orthodox. 15% Roman Catholics, 4% Protestants, 10% others). Following the proclamation of independence of BOH, a war began and continued until December 1995, when the presidents of BOH, Croatia, and Serbia signed the General Framework Agreement on Peace (GFAP-Dayton Peace Agreement) in Paris on 14 December 1995. The agreement brought a halt to the fighting, and established the basic structure of the present day state. Since the Dayton Peace Agreement, BOH has been subject to

international law with internal structure as defined by the Constitution of BOH, with existing, internationally recognized borders.

Bosnia and Herzegovina became an IAEA Member State in 1995 and initiated its first TC programme during the same year.

B. Geography

BOH is located in Southeastern Europe, in the western Balkans. The total area of BOH is 51.129 km^2 with the border of 1538 km, 762.5 km of which is terrestrial, 751 km river and 23.5 km sea border. Borders are with the Republic of Croatia (932 km), Serbia (357 km) and Montenegro (249 km), and on the north, BOH has access to the river Sava and in the south access to the Adriatic Sea. The terrain is mostly highland with the average height of 150 m above sea-level, the climate is moderate continental and in a smaller part also Mediterranean.

Based on the findings of the recent census held in October 2013, the estimated population of BOH is about 3.8 million inhabitants. The main nationalities are Bosniak 48%, Serb 37.1%, Croat 14.3%, other 0.6% (according to the estimation of 2000).

The major cities are the capital Sarajevo, Banja Luka in the northwest region, Bijeljina and Tuzla in the northeast, Zenica and Doboj in the central part of Bosnia and Mostar in the Herzegovina region.

C. Administration

The Constitution of BOH was adopted on 14 December 1995 and included as part of the Dayton Peace Agreement. The Constitution protects political pluralism, human rights and private property and provides for a parliamentary form of government with a bicameral legislative assembly by which the executive, legislative and judicial powers are exercised by separate and independent bodies.

According to the Dayton Peace Agreement, BOH has several levels of political structure. It consists of two entities: the Federation of Bosnia and Herzegovina (FBIH) that covers 51% of BOH's total area and Republika Srpska with 49% of BOH's territory. In 2000, the Brčko District was created out of land from both entities and is a self-governing administrative unit under the sovereignty of BOH. The third level of BOH's political subdivision is manifested in cantons. They are unique to the FBIH entity, which consists of ten of them. All of them have their own cantonal government, which is under the Constitution of the Federation.

The head of the state is the Presidency of BOH, which consists of three members, one of the members chairs the office on a rotational basis and represents the country home and abroad. The members of the presidency are elected by a popular vote for a four-year term.

The Council of Ministers is the executive branch of the government of Bosnia and Herzegovina. The Chair of the Council of Ministers is nominated by the presidency and approved by the state-level House of Representatives and is responsible for appointing other Ministers. There are nine state Ministries of BOH that share the responsibilities (See Annex I).

The Parliamentary Assembly is the legislative body. It consists of two houses: the House of Peoples and the House of Representatives. The House of Peoples has 15 delegates chosen by parliaments of the entities (by the Federation's House of Peoples and the Republika Srpska's National Assembly) to serve four-year terms. Two-thirds of the House of Peoples are from the FBIH (5 Croats and 5 Bosniaks) and one-third are from the Republika Srpska (5 Serbs). The state-level House of Representatives is composed of 42 members elected by the people under a form of proportional representation to serve four-year terms; two-thirds of members are elected from the FBIH and one-third from the Republika Srpska.

The Constitutional Court of BOH is the supreme, final arbiter of legal matters. It is composed of nine members: four members are selected by the House of Representatives of the FBIH, two by the Assembly of the Republika Srpska, and three by the President of the European Court of Human Rights after consultation with the Presidency.

However, the highest political authority in the country is the High Representative in BOH, who serves as the chief executive officer for the international civilian presence in the country.

D. Economy - policy and development

General: BOH is rich in natural resources (forests, ore deposits: coal, iron ore, lead, zinc, manganese, bauxite, and water potential), and has an important industry share in some branches such as steel production, vehicle assembly, textiles, tobacco products, wooden furniture, domestic appliances and oil refining.

BOH has a transitional economy with limited market reforms. The economy relies heavily on the export of metals as well as on remittances and foreign aid. A highly decentralized government hampers economic policy coordination and reform, while excessive bureaucracy and a segmented market discourage foreign investment. The warfare in BOH caused production to plummet. With an uneasy peace in place, output recovered in 1996-1999 but slowed in 2000-2002 and picked up again during 2003-2008, when GDP growth exceeded 5% per year. However, the country experienced a decline in GDP of nearly 3% in 2009 reflecting local effects of the global economic crisis, and GDP has stagnated since then. Foreign banks, primarily from Austria and Italy, now control most of the banking sector. The konvertibilna marka (convertible mark or BAM),the national currency introduced in 1998, is pegged to the euro, and confidence in the currency and the banking sector has increased. BOH's private sector is growing, but foreign investment has dropped off sharply since 2007. Government spending, at roughly 50% of GDP, remains high because of redundant government offices at the state, entity and municipal levels. Privatization of state enterprises has been slow, particularly in the Federation, where political

division between ethnically-based political parties makes agreement on economic policy more difficult. High unemployment remains the most serious macroeconomic problem. Successful implementation of a value-added tax in 2006 provided a predictable source of revenue for the government and helped rein in gray-market activity. National-level statistics have also improved over time but a large share of economic activity remains unofficial and unrecorded. BOH became a full member of the Central European Free Trade Agreement in September 2007. BOH's top economic priorities are: acceleration of integration into the EU; strengthening the fiscal system; public administration reform; World Trade Organization (WTO) membership; and securing economic growth by fostering a dynamic, competitive private sector. In 2009, BOH was granted an International Monetary Fund (IMF) standby arrangement, necessitated by sharply increased social spending and a fiscal crisis exacerbated by the global economic downturn. Disbursement of IMF aid was suspended in 2011 after a parliamentary deadlock left BOH without a state-level government for over a year. The IMF concluded a new standby arrangement with BOH in October 2012, with the first tranches paid in November and December 2012.

The macroeconomic situation in BOH is characterized by two key negative processes:

- Economic stagnation: Current real GDP is lower than in 2008 after a series of recession years throughout this period (2009/2008 -2.9%, 2010/2009 +0.7%, 2011/2010 +1.2%, 2012/2011 -0.5%).
- Increase of external and internal public debt: In 2012, the external debt of the government sector in BOH increased so that by the end of the year it amounted to 7.13 billion BAM, the debt was higher by 470.8 million BAM or 7.1% compared to the situation at the end of 2011. Expressed as a percentage of GDP, together, internal and external debt in 2012 amounted to 44.2% of GDP.

All administrative levels have been financing high levels of public spending by borrowing from available, albeit limited local and international sources. The total public debt of BOH was likely to reach the level of close to 45 % of GDP by the end of 2013, compared with 33 % of GDP in 2007. This is fairly high for a country like BOH.

Energy: The energy sector is considered as having the country's greatest long-term development potential. BOH is rich in natural water resources and is the only net exporter of electricity in the Western Balkans. In 2009, the main sources of energy in BOH were hydro and thermal power plants that covered 62% of the total. Hydro potential of the country is estimated at 8000 MW with a technically feasible potential of 6,800 MW and economically feasible potential of 5,800 MW. The production capacity of currently existing plants is 2,100 MW, of which the Republika Srpska is 720 MW and FBIH is 1380 MW, which is 53% of the total energy produced and only 37% of the total economically feasible potential. BOH is in eight place in Europe with its annual hydroelectric potential. Significant natural resources in BOH are coal, whose reserves are estimated at something over 6 billion tones. Currently, there are four thermal power plants in the country with 1,745 MW of installed capacity – in the Republika Srpska 600 MW and in FBIH 1145 MW. BOH also has significant potential in renewable energy sources, green energy,

such as wind, solar energy, biomass and geothermal energy. Their utilization potential is 30% higher than the EU average, and the highest in the Balkans. This in particular pertains to wind energy potential, estimated at 600 MW, solar energy, estimated at 67.2 PWh, and biomass, taking into accounts the rich forest resources.

Policy: Over the years, the country has developed numerous, sector-related strategies which frequently face considerable challenges in terms of inadequate implementation capacities or insufficient statewide support and funding. Disagreement among politicians about the division of competencies at state and entity levels is a contributing factor to lack of a statewide strategic vision. An agreed and effective internal coordination mechanism would enable BOH to establish its common position on various issues and processes, including the EU integration process, and to communicate through one common voice. An established internal coordination mechanism is also one of the key EU-imposed prerequisites for unblocking the EU integration process and allowing BOH to submit its membership application.

In 2013, the EC initiated the formulation process of the 2014-2020 *Country Strategy Paper for BOH*, which will guide the EU's next programming cycle in BOH and provide the basis for the new *Instrument Pre-Accession* (IPA II).This process currently represents the only long-term, comprehensive planning process that encompasses all levels of government and enjoys limited political support. Although it is expected to primarily define the long-term partnership between BOH and the EU, in the absence of a statewide development planning process, this document serves as a very useful reference document.

II. NATIONAL DEVELOPMENT PRIORITIES AND ACTIVITIES RELEVANT TO THE AGENCY'S TECHNICAL COOPERATION PROGRAMME

II.1 Legislative framework

The *Law on Radiation and Nuclear Safety* in BOH entered into force in November of 2007. This Law established the general framework of the system of control over the sources of ionizing radiation, the protection of people, the present and future generations and the environment from exposure or potential exposure to ionizing radiation. Detailed regulations in the fields of radiation safety, waste safety, transport and nuclear safety are prescribed in bylaws.

The Law envisaged the establishment of the SRARNS as the effectively independent regulatory body and took over all previous powers in the field of radiation and nuclear safety as a result of years of the process of harmonization of legislation with the relevant international standards and in cooperation with International Atomic Energy Agency (IAEA) and the European Union (EU).

Security and safeguards issues are not adequately covered in BOH legislation. SRARNS is planning to propose amendments to the Law to the Parliamentary Assembly, which will enable adequately covering all missing issues regarding security, safeguards and other relevant fields.

During the process of amendment to the Law, SRARNS will closely cooperate and take into account all suggestions by the IAEA Office of Legal Affairs (OLA).

The Parliamentary Assembly of BOH adopted the Law on Liability for Nuclear Damage ("Official Gazette of BiH", No. 87/13), which has been made in accordance with the Vienna Convention on Civil Liability for Nuclear Damage (1997) in November 2013.

II.2 Regulatory Issues

The general functions of the regulatory body encompass regulation, licensing, review and assessment, inspection, enforcement, international cooperation and public communication. The areas of responsibilities include nuclear safety, radiation safety, radioactive waste safety, transport safety, safeguards, physical protection, emergency preparedness and response and environmental monitoring.

The regulatory body in the field of radiation and nuclear safety in BOH needs to fulfill its statutory obligations as well as the requirements of the *EU Nuclear Safety Directive*.

SRARNS is a relatively new regulatory body, with modest human and material resources from one side, and with big challenges and a wide range of regulatory activities (including: occupational exposure, medical exposure, public exposure, emergency preparedness and response, training and education, transport safety, security, etc.) on the other. In the coming period it is necessary to continue to strengthen the regulatory body to be able to fulfill all requirements.

The technical services for radiation protection play an important role in the system of radiation protection in BOH. Their role is especially important in providing classification of exposed workers and categorization of controlled and supervised areas, workplace and individual monitoring, and health surveillance, which are the basis for licensing.

The interfaces with the Agency's TC programmes are in the areas of knowledge management, licensing issues of existing and new facilities, radiation protection, inspection practices, regulator's experience exchange, as well as other specific issues related to the radiation and nuclear safety.

II.3 Health

In the area of medical use of radiation, BOH has made substantial progress in recent years, particularly in the field of radiotherapy and where capacity has multiplied. Upgrading radiotherapy, nuclear medicine and diagnostic radiology in order to achieve an acceptable international standard level of medical services which fulfills the requirements of international standards is part of the government policy with government committed resources and assured sustainability. In addition to one existing center for radiotherapy at the Clinical Center of

Sarajevo University, four new centers in Tuzla, Banja Luka, Mostar and Zenica have been established and opened in the last five years.

One of these centers for radiotherapy, located in Banja Luka, is established according to the model of Public-Private Partnership. The Center is operated by a private company which provides medical service to all oncology patients requiring radiotherapy from the territory of the Republika Srpska and each patient receives an individually tailored medical treatment which is fully covered by the Public Health Insurance Fund. The progress in radiotherapy was accompanied by progress in medical physics; three new medical physics departments were opened in Tuzla, Zenica, and Mostar and the number of medical physicists has doubled in the last five years. According to the *Regulation for radiation protection of workers and general population* (Official Gazette B&H No. 102/11) medical physics departments may cover the tasks of radiation protection departments, including the responsibilities of a radiation protection expert as defined in EURATOM Directive 59/2013.

BOH has also made a significant step forward in the use of new techniques in the field of nuclear medicine. The first Position Emission Tomography (PET) in BOH was introduced in diagnostic practice in October 2013 at the Clinical Center of Sarajevo University, and it is expected that in the near future PET technology will be introduced in other clinical centers in the country.

The control of medical exposure will continue to be a priority in the country's TC programme for all medical applications. Quality assurance (QA) and the establishment of a system to ensure reduced radiation risks to the public and the environment, including the capabilities for medical response in case of radiation emergencies, are the priority.

The Agency's technical assistance is considered essential in building human capacity for these new techniques and also to allow for continuous professional development so that patients can benefit from treatment at an early stage, especially in the case of cancer diagnosis and treatment.

II.4 Radioactive Waste Management

Today, around the world, nuclear technology is used for a broad range of applications, from generating electricity to increasing food production, from fighting cancer to managing fresh water resources and protecting the world's seas and oceans. Despite the relatively limited use of radioactive materials and other sources of ionizing radiation in BOH the establishment of safe management of radioactive waste originating from medicine, industry and research activities, as well as solving the problem of lost or damaged radioactive sources, is one of the primary priorities in this area for the country.

The state policy on the safety of ionizing radiation sources in BOH was promulgated in June 2012 by the Council of Ministers and based on a draft prepared by SRARNS. It is a general policy but three sections contain the specific policy on the safe management of radioactive waste. Based on the policy, the *National strategy of radioactive waste management* was prepared

by SRARNS and adopted by the Council of Ministers of BOH in November 2013. Together with the already prepared *Regulation on safe management of radioactive waste* this document will be the base for establishing the new system for radioactive waste management in BOH.

At present, radioactive waste is provisionally stored in six locations. The location close to Sarajevo is considered to be the "central store" for the Federation of BOH (and the whole country in case of emergency). No store for the Republika Srpska exists at this moment and there are five other temporary storage facilities. None of those facilities is licensed and all storage facilities are in a poor state regarding both safety and security. Radioactive waste storage constitutes an important radiological issue and a priority area for collaboration with the IAEA. A future site for the single central radioactive storage facility is under selection, thereafter the immediate next step will be to build an adequate building or to reconstruct an existing building and to designate and train the personnel of the chosen facility.

External support is required to train staff and adequately equip the future central storage to meet requirements of international standards and the EU *acquis*. An ongoing TC Project is addressing this topic.

II.5 Emergency Preparedness and Response

Article 19 of the *Law on Radiation and Nuclear Safety* (2007) entrusts the regulatory body to prepare a radiation emergency plan in line with international conventions.

The *Emergency Preparedness and Response plan* has been developed and was adopted by the Council of Ministers in September 2014 and is pending approval of the Parliamentary Assembly.

The areas of interest in technical cooperation include finding synergies between conventional emergency response and nuclear or radiological emergency response, as well as education of first responders who are embedded in the structures under different ministries and institutions at different levels of internal organization in the country. Also mobile environmental monitoring teams as part of the national response infrastructure and the communication between the emergency teams need to be standardized. It is expected that IAEA support in this area will be requested.

II.6 Security

BOH is a party to the *Convention on the Physical Protection of Nuclear Material* and the *Treaty on the Non Proliferation of Nuclear Weapons*. The *Safeguards Agreement* and the *Additional Protocol entered into force on 4 April 2013 and 3 July 2013 respectively.*

BOH is willing to support and take part in the IAEA activities to increase the level of physical protection, as well as to strengthen security of radioactive sources, and to increase awareness and control to prevent illicit trafficking of nuclear and radioactive materials across the borders.

BOH participates in an IAEA activity related to the development of countries' *Integrated Nuclear Security Support Plans* (INSSP). BOH hosted IAEA experts in February 2014 who helped relevant institutions to develop an INSSP Draft for the country. The INSSP was adopted by the Council of Ministers in October 2014. In addition, BOH has expressed its support of the IAEA *Code of Conduct on the Safety and Security of Radioactive Sources* and its supplementary guidance.

II.7 Environment

The law on radiation and nuclear safety, as well as the *EU acquis* including the *Euratom Treaty* require monitoring of the environment for radioactivity and application of technologies which produce an as low as reasonably achievable radiation burden to the population and workers.

With support through the IAEA technical cooperation programme great progress has been made in strengthening infrastructure of the laboratories for environmental monitoring and in training personnel to perform complex measurements.

The secondary legislation for environmental monitoring is not adequately established. The regular monitoring programme has not yet been defined in the regulations. Some measurements are currently performed in both entities, but not in accordance with recognized good international practice and the requirements of the *Euratom Treaty*.

Therefore, there is a need to develop a national monitoring programme and to strengthen the supporting laboratory with equipment related to on-line and off-line monitoring systems.

II.8 Nuclear applications

The country's policy is to strengthen economic growth using, to the extent possible, domestic capabilities and resources. Technical cooperation, transfer of technology and know-how in selected promising fields of the country's economy shall be continued and linked to the national development programme. BOH has reached a good level of national expertise in the use of nuclear applications in a number of fields, such as medicine and health, agriculture, industry, environment and hydrology. The government is committed to continue the promotion and application of new techniques including nuclear for technological development of the country, strengthening links with end-users and taking advantage of the existing and already transferred knowledge through TC projects implemented in the past.

In that context, maintaining and developing national capabilities in nuclear applications is one of the aims in line with the needs to sustain and further develop the country's capacity. In this respect, the Agency's assistance is also required for the mid-term. Specific expertise and services regarding access to up-to-date know-how and technology as related to national development plans and activities would also be beneficial.

II.9 Sustainable Energy Development

The energy sector in BOH is considered its greatest long-term development potential. BOH is rich in natural water resources and is the only net exporter of electricity in the Western Balkans.

Expected accelerated economic development will lead to increased energy demand. Increased demand will put additional stress on the existing, ageing energy infrastructure and environment. At the same time, social and economic development will have to be supported by an adequate evolution of the regulatory and policy framework as well as construction of energy generation facilities to secure timely and sustainable delivery of energy to the society. Energy efficiency programs will have to be developed and established.

In the context of sustainable energy development, further improvement of local knowledge, expertise and skills in energy planning could substantially contribute to the overall social and economic development goals of BOH. Local experts should have access to the latest energy planning tools and training that is available from the Agency. Therefore, the Agency's technical assistance in capacity building in this area is also required for the mid and long term.

II.10 Coordinated Research Projects (CRP)

While not all Coordinated Research Projects (CRPs) lead to technical cooperation projects, the two are complementary. CRPs offer Member States the ability to develop cutting edge technologies and to undertake research in nuclear techniques through collaboration between their respective research institutions and IAEA experts. By advancing national knowledge and expertise in a particular field, Member States are better equipped to carry out technical cooperation projects.

CRP findings, once tested and proven, can be applied practically through technical cooperation projects. This moves scientific research and development out of the laboratory and into the field, allowing the IAEA to help Member States implement new methodologies expediently, ensuring that countries and their populations benefit promptly from the application of new scientific discoveries. BOH intends to participate in relevant CRP's covering high priority development topics.

II.11 Millennium Development Goals (MDG)

Reflecting the difficult challenges in the political situation, progress towards the achievement of the MDGs in BOH has been uneven. Over the period of 2000-2013, considerable progress was made towards MDG2 (Education), MDG 6 (HIV/AIDS) and MDG 8 (Global Partnership). Some progress has been made in relation to MDG 3 (Gender Equality) and MDG5 (Maternal Health), while limited progress has been made in MDG7 (Environment). Achievements are overshadowed by the level of inequality that affects certain groups. For example, child mortality rates for Roma are between three and four times higher than those for the general population.

Progress is least evident for poverty reduction (MDG1) with nearly 1 in 5 persons and every sixth household living in poverty. Average monthly consumption was 20 percent higher in urban than in rural or peri-urban areas.

Out of the 68 indicators used to monitor MDG progress, under half have been fully achieved or are likely to be achieved by 2015. Political challenges combined with the global and regional economic downturns since 2008 have negatively affected the economy and employment opportunities, and have weakened social services, pensions, and healthcare systems. A survey of citizens conducted by the UN showed that more than half are not satisfied with the financial situation of their households.

II.12 UNDAF/ One United Nations Programme

The current United Nations Development Assistance Framework (UNDAF) for Bosnia and Herzegovina (2010-2014) will expire at the end of 2014. The revised *One United Nations Programme has* been prepared for the period 2015-2019 and is pending endorsement by the Council of Ministers.

Thirteen *One Programme* outcomes have been selected that respond to country needs and make use of the UN's comparative advantages. These were identified through an intensive consultation process with BOH authorities and implementing partners. The new *One United Nations Programme* (One Programme) has linkages to the proposed mid-term IAEA TC programme, particularly in the three outcomes indicated below:

Outcome 3. *By 2019, there is effective management of war remnants and strengthened prevention of and responsiveness to man-made and natural disasters*

- Reference is made to the proposed new TC project entitled "Developing arrangements and capabilities for preparedness and response to a nuclear and radiological emergency (BOH2014002) submitted for the 2016-2017 TCP cycle.

Outcome 5. *By 2019, legal and strategic frameworks enhanced and operationalized to ensure sustainable management of natural, cultural and energy resources*

- Reference is made to the active TC projects on radioelement mapping (BOH/7/003) and radioactive waste management (BOH/9006).

Outcome 11. *By 2019, provision of targeted health and public health policies and services, including management of major health risks, and promotion of targeted health seeking behaviors, is enhanced.*

- Reference is made to the active TC project on radiation protection in medicine (BOH/9/005).
- Reference is made to the proposed new TC project on nuclear medicine entitled "Improving clinical management of patients with non-communicable diseases by

enhancing the nuclear medicine capabilities on SPECT/CT and PET/CT imaging" submitted for the 2016-2017 TCP cycle.

- Reference is made to the proposed new TC project entitled "Establishing of national reference levels in diagnostic radiology" that has been submitted for the 2016–2017 TCP cycle.
- Reference is made to the planned new TC project concept entitled "Radiation protection of patients in medical exposure" which will be submitted for the TCP cycle 2018-2019.

III. RELEVANT INTERNATIONAL DEVELOPMENT ASSISTANCE

BOH has been a recipient of bilateral and multilateral financial and technical assistance in a wide spectrum of fields and subjects that has helped the country in its programme of political, economic and social change. International cooperation and assistance has been considered essential in implementation of the Government programme of measures for improvement of the country's situation.

Multilateral and bilateral donors, international financial organizations, international organizations, such as the United Nations and the Organization for Security and Cooperation in Europe, and NATO work closely on implementing the *Dayton Peace Accord* at a variety of levels. Regular meetings of the *Peace Implementation Council* members help prioritize broader programme policies and set concrete implementation objectives. On-the-ground coordination, through sectorial task forces covering issues such as economic reform, institutional reform in the utility sectors and refugee returns, strengthens donor effectiveness and maximizes technical assistance and programme resources by leveraging various donors funding, avoiding project duplication, and ensuring that constraints to implementation are addressed as common donor concerns.

In recent years, particularly with the progress towards the EU integration, the above kind of assistance has been substantially reduced and emphasis is increasingly on support through pre-accession funds of the EU.

Since 2007, the *Instrument for Pre-Accession assistance (IPA)* has provided financial support to the Western Balkans for projects concerning nuclear safety and radiation protection. The objective of IPA assistance in this field is to enable candidates and potential candidates to develop legislation and regulations in compliance with the *EU acquis,* and secondly to have the capacity and the technical means to implement it.

Six main important issues have been assessed by the IPA-funded projects: the current regulatory infrastructure, the management of sealed radioactive sources including radioactive lightning rods, the assessment of the extent of the radiological problems that may derive from the existence of Naturally Occurring Radioactive Material (NORM), the management of radionuclides and radioactive waste in medical establishments, the prevention and combat of

illicit trafficking of nuclear materials and radiation sources, and the monitoring of radioactivity in the environment.

Following the assessment of the above six areas, projects have been implemented in the field of regulatory infrastructure, radioactive waste in nuclear medicine, dosimetry, medical exposure, and education in the field of radiation protection.

A draft document named *Roadmap for possible future EU assistance to Bosnia and Herzegovina in the field of nuclear safety and radiation protection* is already prepared. BOH institutions expect significant assistance from the EU in this area in the near future through the process of EU accession.

IV. OVERVIEW OF AGENCY PAST AND PRESENT TECHNICAL COOPERATION ACTIVITIES IN THE COUNTRY

IV.1 Overview of Past TC Activities

BOH became a member of the IAEA in 1995. TC activities prior to 1992 were undertaken as part of the programme of the Former SFRY. During that period, the institutions of BOH, compared to activities in other SFRY Republics, were not included in TC activities on a significant level.

BOH has benefited substantially from the Agency's technical assistance programme that started in 1996. During the period from 1996 to present, more than four million Euro worth of assistance was provided through the IAEA TC programme under 18 completed and on-going national TC projects, as well as through active participation in regional and interregional TC projects. This cooperation focused mainly on radiation safety, human health, industrial non-destructive methods, human resource development, and the use of nuclear related technology in agriculture, environment and protection of cultural heritage.

The following national TC projects were concluded prior to 2014:

- BOH/0/003 Control and Prevention of Illicit Trafficking of Radioactive Materials
- BOH/2/002 Monitoring of Radioactivity in the Environment
- BOH/4/002 Sealed Radiation Sources Management in Areas Affected by War
- BOH/6/002 Rehabilitation of Nuclear Medicine Services
- BOH/6/004 Quality Assurance Programme in Diagnostic Radiology
- BOH/6/005 Rehabilitation of Radionuclide Therapy
- BOH/6/008 Improvement of Brachytherapy Services
- BOH/6/009 Strengthening Medical Physics Capacity in Diagnostic Radiology
- BOH/6/010 Upgrading of Radionuclide Therapy in Bosnia and Herzegovina
- BOH/6/011 Strengthening Medical Physics Capacity in Diagnostic Radiology (Phase II)
- BOH/6/012 Establishing a Medical Radiation Physics Centre

- BOH/7/002 Indoor and Outdoor Monitoring of Naturally Occurring Radioactive Material
- BOH/8/002 Improvement of Non-Destructive Testing for Industry
- BOH/9/002 Establishment of a National Regulatory Control System
- BOH/5/001 Reducing the Incidence of Brucellosis in Animals and Humans by Surveillance and Control
- BOH/6/013 Strengthening Radiotherapy Physics Units to Meet the Requirements of International Standards
- BOH/6/014 Enhancing Nuclear Medicine Capabilities for Patient Management in Oncology, Cardiology and Neurology

The TC programme for the TCP cycle 2012-2013 focused on radiotherapy and nuclear medicine, supporting development of the regulatory body for radiation and nuclear safety, and strengthening the capacity of laboratories for the control of brucellosis using nuclear applications.

To date, BOH has hosted several expert missions of the IAEA in order to assess health and regulatory infrastructure, and the largest of those are highlighted below.

The RaSSIA (Radiation Safety, and Security of Radioactive Sources, Infrastructure Appraisal) mission was conducted in November 2005. The aim of the mission was to assist in assessing the regulatory infrastructure for radiation safety and the security of radioactive sources.

A QUATRO Mission (Quality Assurance Team for Radiation Oncology) was performed at the Clinical Center of Sarajevo University in 2006. The objective of the mission was to carry out a comprehensive external peer review and evaluation of the quality of practice and delivery of radiation therapy, the quality and realization of teaching and training programmes, and research activities in the Department of Oncology at the University Clinical Center of Sarajevo.

The Department of Radiology of the University Clinical Center of Banja Luka benefited from a QUAADRIL Mission (Quality Assurance Audit for Diagnostic Radiology Improvement and Learning), which was carried out in September 2008. That was the first QUAADRIL audit carried out by the IAEA and as such it was first piloted in BOH.

The Department of Nuclear Medicine of the University Clinical Center of Sarajevo benefited from a QUANUM Mission (Quality Management Audit in Nuclear Medicine Practices), which was carried out in September 2011. It was arranged primarily to assess a patient focused service in order to improve clinical practice in nuclear medicine.

IV.2 Current TC Programme

The TC programme approved for BOH for the 2014 - 2015 cycle consists of one ongoing and three new projects. The programme will continue to strengthen an effective and functional system of radiation protection and nuclear safety in accordance with international standards.

One of the most complex areas for which continued IAEA support is foreseen is in management of radioactive waste and the establishment of a sustainable system of radiation and nuclear safety in BOH.

BOH/9/004: Building Capacity and Strengthening the National Regulatory Infrastructure for the Full Implementation of the Basic Safety Standards (ongoing)

The project is planned for three years (2012–2014). The objective of the project is to support development of the regulatory body (SRARNS) for radiation and nuclear safety to perform its mandate and fully implement the Basic Safety Standards (BSS) and other international requirements in the field of radiation protection, waste safety and nuclear safety.

BOH/7/003: Providing Radioelement Mapping

This project has the objective to compile baseline data on radioelement content and natural variability in surface and subsurface soil layers, as a reliable source of information for estimation of the terrestrial radiation dose to the human population, geological mapping, mineral resource exploration, environmental problems, medical geography, crops and livestock yields, and natural hazard identification.

BOH/9/005: Strengthening Radiation Protection in Medicine

The objective of the project is to upgrade radiation protection in medicine with the strengthening of medical physics departments in five major hospitals in BOH, taking into account the role of medical physics and radiation protection departments in local legislation. This project is expected to greatly contribute to the implementation of national legislation in the field of radiation protection based on BSS and EC directives.

BOH/9/006: Strengthening Radioactive Waste Management

The project objective is to support management of radioactive waste, which is very important as there are no central storage facilities for radioactive waste in BOH, and there is no identified option to store spent radioactive sources, orphan sources and other radioactive material. A number of sources have become disused or spent in facilities that had stopped using them and there are a number of radioactive lightning rods installed around the country which need to be dismantled, removed and safely stored. There also exists a high probability of the appearance of orphan sources in scrap metal, which cannot be safely stored. The overall expected outcome of this project is a reduction of public and collective doses from spent sealed radioactive sources.

V. ENVISIONED COUNTRY PROGRAMME OUTLINE

V.1 The Medium-Term Programme

The *Law on Radiation and Nuclear Safety in Bosnia and Herzegovina* is closely compatible with IAEA Standards and Guidance for radiation safety and the safety and security of radioactive sources, but during the planned activity of amendment to the Law all missing issues regarding security, safeguards and other relevant fields will be more adequately defined. For all these activities, close cooperation with the IAEA Office of Legal Affairs is needed. At the same time BOH is going to continue to participate in the Agency's legislative assistance activities through the regional programme, which assists Member States in establishing adequate national **legal frameworks** for the application of safe and peaceful uses of nuclear technology to comply with their international obligations and fundamental requirements of the relevant legal instruments and international standards.

The most important area for the medium term plan is to continue to strengthen **regulatory infrastructure** through the process of education and increasing the technical capacity of the regulatory body and technical support organizations. A new TC project entitled "Implementation of an integrated management system in SRARNS" has been proposed for the 2016-2017 TCP cycle.

Excluding the area of **management of radioactive waste**, which is already included in the current TC programme, great attention in the medium term programme shall be given to the implementation of the **Radiation Emergency Plan**. Its implementation requires the participation of a large number of institutions and organizations which currently lack adequate human resources and technical capabilities. Implementation of the Plan requires comprehensive preparation and coordination. The leading role will be taken by the regulatory body and support and collaboration with other stakeholders is essential. The emergency preparedness project will be aimed at finding best possible solutions for efficient decision making and fast and smooth implementation of eventual countermeasures. The communication systems among the stakeholders during emergency response need to be upgraded to secure reliability; data transfer of measurements and user friendliness and avoid redundancy. Also the equipment for mobile units and emergency teams need to be renewed and brought to the contemporary practice and standards in this area. A new TC project entitled "Developing Capabilities for preparedness and response to a nuclear and radiological emergency" has been proposed for the 2016-2017 cycle.

With the medium term programme support to the **human health** sector, especially in the introduction of new techniques including diagnostic and therapeutic methods, e.g. Positron Emission Tomography (PET), diagnostic and treatment with radiopharmaceuticals and radiotherapy is a high priority. An imPACT mission to BOH is planned in 2015.

Efficient implementation of medical projects depends on the training of various staff. For the clinical activities of a PET/CT scanner, and high quality image interpretation with hybrid

systems, advanced training in both nuclear medicine and radiology is required. In all these techniques the role of qualified medical physicists is of particular importance and also other staff including nurses and technologists must be adequately trained. A new TC project entitled "Improving clinical management of patients with non-communicable diseases by enhancing the nuclear medicine capabilities on SPECT/CT and PET/CT imaging" has been proposed for the 2016-2017 cycle. Counterparts in this project should be big hospitals in the country.

A new TC project entitled "Establishing of national reference levels in diagnostic radiology" has been proposed for the 2016–2017 cycle. Counterparts in this project should be big hospitals in the country and the Institute of Public Health, Republika Srpska. In the framework of IPA projects, medical physics departments in Zenica, Tuzla, Mostar, and Banja Luka were provided with equipment for quality control and patient dosimetry in **diagnostic radiology**. Together with existing equipment in the University Clinical Centre of Sarajevo and Institute of Public Health Republika Srpska, it would be a base for establishing diagnostic reference levels (guidance levels) which is one of the priorities in implementation of the Regulation on *Radiation Protection for Medical Exposure* (Official Gazette B&H No. 13/11). Establishing national diagnostic reference levels would be a condition for obtaining a database of patient doses which could be used for establishing criteria for justification of medical exposure in diagnostic radiology and a basis for the future optimization of radiological procedures.

Although the regulation on **medical exposure** was promulgated in 2011, in practice the part concerning optimization and especially justification is far from being implemented. It is very important to clarify the responsibilities of the referring medical practitioner, the radiological medical practitioner and the medical physicist, in line with the new BSS. A new project titled "Radiation protection of patients in medical exposure" will be proposed for the 2018-2019 cycle, in order to achieve radiation protection of patients according to the international standards. Training of the staff of new centers as well as expert's advice in patient dosimetry protocols is needed.

The **training of exposed workers** in the field of radiation protection, which is an obligation according to the international standards (BSS, EURATOM Directive 96/29 and 59/13) and regulations are the main task in the building of a radiation protection system in BOH. In 2015 the regulation on licensing technical services for training in the field of radiation protection will be finished and the start of the training is expected thereafter. More than 2,000 exposed workers need to be trained over five years, therefore further IAEA support (training of trainers, equipment, and expert advice for training programmes) is essential.

The issues related to **safety and security** interfaces are gaining more and more attention also in BOH. The areas of primary interest are related to the security of nuclear materials and the security of radioactive sources, especially high activity sealed sources. Support for activities related to strengthening the nuclear security regime for nuclear and other radioactive material out of regulatory control and control to prevent illicit trafficking of nuclear and radioactive materials across the borders will be of high importance. These efforts are directed towards enhancement of

training of security personnel and modernization of surveillance systems, as well as continuous threat assessment.

The roles and responsibilities of the Custom Authorities, Border Police, the Public Health Institutes in each Entity and the regulatory body need to be clearly defined in order to ensure operational cooperation. Neither Customs nor Border Police have documented internal procedures in case of a radiation detection alarm, which leads to uncertainty at the borders when radiation is detected.

More radionuclide identification devices are needed to support a more comprehensive response to detection alarms from the mobile or stationary portal monitors at the borders. Additional pagers should be procured for those border crossing points without any radiation detection equipment. The airports, as well as a number of border crossing points, should be equipped. This should be done in coordination with the EU *Integrated Border Management* (IBM) programme and will be covered through the *Integrated Nuclear Security Support Plan* (INSSP) which was adopted by the Council of Ministers in October 2014.

Strengthening environmental monitoring and food safety/quality is an area where BOH intends to request additional support from the IAEA in the medium term. Projects will seek to improve measurements to provide the data needed for a reliable assessment of the radiation doses received by the population in normal conditions as well as to have reference values to estimate dose contribution in emergency conditions.

Improving capabilities to monitor contaminants in food and feeds and mycotoxin assesment in the food chain are topics which will be addressed in a project for the 2018-2019 TCP cycle. In order to assess the risk for animals, and consequently, for humans, it would be necessary to determine the presence of the most common fooder's mycotoxins such as (aflatoxins, deoxynivalenol, zearalenone, fumonisins and ochratoxin A) covered by EU regulations (DIRECTIVE 2002/32/EC and COMMISSION RECOMMENDATION 2006/576/EC) and the regulations of BOH (72/2011). The results of screening will be the starting point for the selection of appropriate methods of mycotoxin reduction in feed, prevention or detoxification.

Future programme attention will be also given to the **use of nuclear applications in agriculture, food production, industry, and human health**. Production of sufficient, safe and traceable food and protection/conservation of agricultural resources including soil and water are the ultimate goal in agriculture, which consitutes a large part of the economy. Application of new isotopic and/or nuclear related techniques for this purpose is needed. The main objective for potential future projects in this area is to **improve capability of laboratories** to provide reliable data for the control of contamination of soil, groundwater and food with agrochemicals to better understand and improve environmental/food safety and quality. The animal production sector in BOH is a significant source of income for farmers, supplying a substantial portion of the food in the country's economy. Maintaining and improving animal production requires a consistent system for early detection of all threats affecting this sector. Three areas in this sector are critical for achieving better and healthier animal products: improved animal nutrition, optimized animal

reproduction, and a system for monitoring the animal diseases, including those (approximately 70%) which affect human health. Nuclear technologies, such as the use of isotopic tracers to study the metabolic pathways of feedstuffs, various radioimmunoassay setups used to monitor the sexual cycle in female animals, and the serological and molecular based assays for early detection of animal pathogens have a unique and irreplaceable role in the field of animal health and production. Therefore, capacity building and technology transfer projects in these areas will be also supported with respect to soil and groundwater quality and on-farm management factors and land use practices that can enhance soil productivity, minimise soil degradation and greenhouse gas emissions from farm lands, and improve the ecosystem services of agricultural soil and water resources for both water quantity and quality purposes.

Another priority is the transboundary suppression of **Mediterranean fruit fly** integrating the Sterile Insect Technique (SIT) with other control methods in the Neretva Valley in BOH (a successful area-wide project is ongoing on the Croatian side of the border). Fruit production is an important economic and social activity with a high potential for expansion. The most important fruit crops cultivated are susceptible to the Mediterranean fruit fly. Consequently, this pest is of great concern for producers and local authorities, which are working together to find solutions which are economically viable and environmentally more acceptable than the current intensive use of insecticides.

Special attention must also be given to the monitoring of **radon** and its progeny by strengthening national capacity to produce a radiation map for the country to be used as a reference in the event of a radiological emergency with local, regional or global consequences as well as benchmark for setting correct radiation protection standards for the population. Such measurements are presently not carried out systematically but only sporadically and mainly for research purposes. Establisment of a regular programme on radioactivity monitoring in accordance with recognized good international practice and requirements of the Euratom Treaty is needed. The programme should also include monitoring of the narrow coast line. In addition, upgrading the existing early warning network and improving maintenance of the network is a priority goal in the medium term. Potential counterparts for this area could be the technical support organizations licensed for this practice by the regulatory body.

Sustainable energy development and capacity building in **energy planning** is very important to BOH in order to adequately plan development of its energy sector, taking into account foreseen and expected international obligations related to energy systems, sustainability targets, water and land use and management and climate change mitigation actions.

V.2 General Support Activities

Some of the areas highlighted above shall continue to be addressed through the regional TC programme in which institutions from BOH also participate. In addition, the country is interested in participating in the regional TC Europe programme projects dealing with radiation safety, human health, waste safety and nuclear applications in order to benefit from a wide range of international experience, expertise and training.

With the aim of better implementation of the proposed projects, stakeholders from BOH will try to provide additional resources through the mechanism of cost sharing, especially when some of the planned project's activities are the purchase of expensive and complex equipment.

ANNEX 1. List of Resource Institutions

A1.1 Competent Authority

State Regulatory Agency for Radiation and Nuclear Safety

The *Law on Radiation and Nuclear Safety* established the 'State Regulatory Agency for Radiation and Nuclear Safety' (SRARNS) as the sole national regulatory body for radiation safety, effectively independent in its regulatory work in accordance with international standards.

The SRARNS has the authority to:

- define the policy in the field of radiation and nuclear safety, the principles of safety, and appropriate criteria as the basis for its regulatory actions;
- prepare and issue regulations and guides, which constitute the basis for its regulatory action;
- define radiation exposures excluded from the scope of regulations on the grounds of not being subject to regulatory control;
- define and implement procedures for notification, authorization, inspection, enforcement of regulatory requirements;
- require from each operator to perform safety assessment;
- enter the premises or the facility, at any time, in order to perform state inspection of safety of radiation sources;
- issue, amend, suspend or revoke, and set the conditions for authorization for import, export, production, purchase, receipt, possession, storage, usage, transit, transportation, maintenance, recycling and final disposal, as well as any other activity related to the sources of ionising radiation;
- issue, amend, suspend or revoke approvals to technical services for radiation protection;
- define exclusions and exemptions with regards to possession and usage of sources of radiation, and issue an adequate document for the purpose;
- undertake appropriate measures in the case of emergency event or nuclear accident;
- establish and maintain the State Register of sources of ionising radiation and persons exposed to ionising radiation, as well as of issued permits;
- cooperate with other administrative bodies and other institutions with respect to the scope of work of the Agency;
- define appropriate methods to disseminate public information on the issues pertaining to ionising radiation;
- define the proposal of the amount of fees for the issuing of the authorization, i.e. approval; shall be concerned with the collection;
- cooperate with other countries and the International Atomic Energy Agency (IAEA), and with other relevant international organizations;

- it is the State partner to the International Atomic Energy Agency;
- represent Bosnia and Herzegovina at the international level with respect to the issues in the field of radiation safety and nuclear safety;
- in cooperation with relevant state agencies, undertake required measures pertaining to the safety of radioactive and nuclear materials; and to ask from other competent bodies to perform monitoring inside the country and in required inspection locations, with the purpose of revealing the source, which are not under regulatory inspection;
- be prepared to assist in emergency situations and react in line with the state action plan for emergency situations;
- define official arrangements with other relevant agencies involved in the regulatory process;
- provide opinions and recommendations with respect to accession to international conventions, as well as recommendations for adoption of other international documents in the field of radiation safety and nuclear safety;
- implement obligations assumed by Bosnia and Herzegovina in line with the international conventions and bilateral agreements pertaining to radiation safety and nuclear safety, and application of protection measures for the purpose of non-proliferation of nuclear weapons.

The SRARNS shall answer to the Council of Ministers of Bosnia and Herzegovina with respect to lawful, complete, effective, and professional realization of functions and competences referred to in Article 8 of the *Law on Radiation and Nuclear Safety*.

The SRARNS shall, at least once a year, submit a report on the status of radiation safety and nuclear safety to the Parliamentary Assembly of Bosnia and Herzegovina.

A1.2 Other Institutions

The **Ministry of Foreign Affairs** carries out the established policies of Bosnia and Herzegovina, works on the development of international relations in accordance with the standpoints and policy of the Presidency of Bosnia and Herzegovina and makes suggestions concerning the determination of position on questions of interest for foreign affairs activities and the international position of Bosnia and Herzegovina. The Ministry of Foreign Affairs also represents Bosnia and Herzegovina in diplomatic relations to other states and international organizations as well as at international conferences. The **Ministry of Civil Affairs** is, among other things, responsible for carrying out tasks which are the responsibility of Bosnia and Herzegovina and which relate to establishing the basic principles for coordinating the activities and plans of entity governmental organs and defining the strategy on an international level, in the fields of health and social security, old age pensions, science and education, work and employment.

The **Ministry of Foreign Trade and Economic Relations** is responsible for foreign trade policy and custom-tax policy of Bosnia and Herzegovina, the preparation of contracts, agreements and other acts in the field of economic relations and trade with other states, the preparation and carrying out of macroeconomic, or rather strategic, documents in the field of economic relations. The Ministry is also responsible for tasks and duties falling within the jurisdiction of the State of BOH including defining policies and basic principles, coordinating activities and consolidating entity plans with those of international institutions in the areas of agriculture, energy, protection of environment and use of natural resources and tourism. This Ministry also includes the Office of Veterinary Medicine of BOH as an administrative unit.

The **Ministry of Communications and Transport** is responsible for the policy concerning the regulation of international communication technology, international and inter-entity traffic and infrastructure, the preparation of contracts, agreements and other acts in the field of international and inter-entity communications and traffic.

The **Ministry of Finance and Treasury** establishes the fundamentals of taxes and tax regulations and establishes relations with international and local financial institutions. Also, it prepares contracts, agreements and other acts according to which Bosnia and Herzegovina takes over credit and other financial responsibilities to other countries and international organizations. In addition to this, it plans and manages BOH's foreign debt and carries out international financial obligations.

The **Ministry of Human Rights and Refugees** is responsible for monitoring and putting into practice international conventions and other documents in the field of human rights and basic freedoms. It also designs and carries out activities aimed at fulfilling the obligations of Bosnia and Herzegovina for the acceptance into Euro-Atlantic integrations, especially concerning the acceptance of the European Convention on Human Rights and Basic Freedoms and its protocol.

The **Ministry of Justice** is responsible for administrative functions dealing with judiciary organs at the state level. It works on international and inter-entity judicial cooperation and on ensuring that legislature of Bosnia and Herzegovina and its enforcement on all levels is in concord with Bosnia and Herzegovina's obligations emanating from international agreements. On a general level, it acts as the central coordinating organ for establishing a concord between the two entities in legislature and standards of the judicial system.

The **Ministry of Security** is responsible for the protection of international and internal borders, the control of traffic at border crossings and the disclosure of criminal offenders, terrorists, drug trafficking, forgery of local or foreign currency, human trafficking and other criminal acts with international or inter-entity elements.

The **Ministry of Defense** is in charge of the overall strategy and policy for the defense system of Bosnia and Herzegovina, including creation of and sustaining defense capacity aimed at

protection of sovereignty, territorial integrity, political independence and international legal personality.

A1.3 Technical Services for Radiation Protection

Currently SRARNS has licensed technical services for radiation protection in the following practices:

- Work place monitoring (6 institutions: Public Health Institute FBOH, Sarajevo (PHI FBOH); Public Health Institute RS, Banja Luka; (PHI RS) Clinical center of University Sarajevo (KCUS); International Medical Centers Banja Luka (IMC), ZIK doo Mostar, MIDDLE POINT doo Sarajevo)
- Personal monitoring of occupationally exposed workers (2 institutions: PHI FBOH, PHI RS)
- Quality control of sources of ionizing radiation in diagnostic radiology (4 institutions: PHI FBOH, PHI RS, KCUS, ZIK doo)
- Quality control of sources of ionizing radiation in nuclear medicine (1 institution: KCUS)
- Quality control of sources of ionizing radiation in radiotherapy (2 institutions: KCUS, IMC)
- Radiation safety control of sources of ionizing radiation in nonmedical practices (4 institutions: PHI FBOH, PHI RS, SIEMENS doo Sarajevo, HERKON doo Mostar)
- Assessment of radiation safety and design of radiation protection measures (3 institutions: PHI FBOH, PHI RS, KCUS)
- Consultations for radiation and nuclear safety (4 institutions: PHI FBOH, PHI RS, KCUS, SIEMENS doo Sarajevo)
- Installing, maintenance, servicing and dismantling of sources of ionizing radiation (6 institutions: SIEMENS doo Sarajevo, DENTA DE Sarajevo, MEDPOINT Sarajevo, DENTAL SM Banja Luka, IMC, NEW SANATRON doo Novi Grad)
- Environmental monitoring (3 institutions: PHI FBOH, PHI RS, Veterinary Faculty Sarajevo - Laboratory for radioactivity control)
- Radon monitoring (2 institutions: PHI FBOH, Veterinary Faculty Sarajevo - Laboratory for radioactivity control)
- Health monitoring of occupationally exposed workers (3 institutions: PHI FBOH, Institute of Occupational Health RS, Institute of Occupational Health of Canton Sarajevo)
- Training in the area of radiation protection (no licensed provider)

ANNEX 2. Resource Estimates and Forecasts Country Programme 2016-2017

Date originated: 17 Dec. 2014

				EUR
1.	Reference figures for approved national programme (2014-2015), as indicative planning figure[1] for the given period. Estimated cash contribution[2] of the Government for the planned period Estimated in-kind contribution[3] of the Government for the planned period Estimated contribution from other sources (multilateral or bilateral partners or NGO)			635,000 EUR
2.	Preliminary estimates for the agreed programmes / projects listed in the Framework Programme			680,000 EUR
	Title			
	(i)	Implementation of an integrated management system in the regulatory body		100,000 EUR
	(ii)	Developing Arrangements and Capabilities for Preparedness and Response to a Nuclear and Radiological Emergency		280,000 EUR
	(iii)	Improving Clinical Management of Patients with Non-Communicable Diseases by Enhancing the Nuclear Medicine Capabilities on SPECT/CT and PET/CT Imaging		150,000 EUR

[1]The indicative planning figures do not obligate the Agency to provide such funding, nor do they suggest the expectation of continued levels of Agency funding. The sole purpose is to assist planning and prioritization of the country framework.

[2]The indicative Government cash contribution does not obligate the Government to provide the stated amount, but indicates the intent and possibility of such support.

[3]In-kind contributions represent the value assigned to non-cash contributions such as providing experts, training courses, and infrastructure. Planning for in-kind contributions can also include bilateral trade and intergovernmental cooperation agreements in the respective programme area.

	(iv)	Establishing national reference levels in diagnostic radiology		150,000 EUR
	Total estimated costs			680,000 EUR
3.	Total estimated resource (1) less total estimated costs (2)			-45,000 EUR

ANNEX 3.Plan of Action

Detailed Plan of Action

CPF Reference planning opportunities	*Proposed action*	*Responsibility for action*	*Expected output*	*Time frame*	*Resource requirements*	*Project concept number*
Implementation of integrated management system in SRARNS and strengthening of its capabilities	Develop the initial project concept into a project design in PCMF prior to 15 December 2014 for review by the Secretariat. Finalize the design during Q1-Q3 2015 for final approval in Q4/2015.	SRARNS representatives	Implementation of an integrated management system in SRARNS, according to relevant IAEA standards for improved radiation safety in Bosnia and Herzegovina. Trained staff.	2016-2017	TBD	BOH2014001
Developing Arrangements and Capabilities for Preparedness and Response to a Nuclear and Radiological Emergency	Develop the initial project concept into a project design in PCMF prior to 15 December 2014 for review by the Secretariat. Finalize the design during Q1-Q3 2015 for final approval in Q4/2015.	SRARNS representatives	Government Approved Emergency Preparedness and Response Action Plan. Upgraded ERP lab. Staff trained.	2016-2017	TBD	BOH2014002
Improving Clinical Management of Patients with Non-Communicable Diseases by Enhancing the Nuclear Medicine Capabilities on SPECT/CT and PET/CT Imaging	Develop the initial project concept into a project design in PCMF prior to 15 December 2014 for review by the Secretariat. Finalize the design during Q1-Q3 2015 for final approval in Q4/2015.	Nuclear Medicine Departments in the Clinical Centers in Sarajevo and Banja Luka	Procedures for PET/CT drafted and adhered to. Feasibility study for cyclotron prepared. Trained staff.	2016-2017	TBD	BOH2014003

Establishing national reference levels in diagnostic radiology	Develop the initial project concept into a project design in PCMF prior to 15 December 2014 for review by the Secretariat. Finalize the design during Q1-Q3 2015 for final approval in Q4/2015.	SRARNS representatives	Report of national dose reference levels in diagnostic radiology in Bosnia and Herzegovina Trained staff.	2016-2017	TBD	BOH2014004
Improving capabilities to monitor contaminants in foods and feed and mycotoxin assesment in the food chain	Consider developing the project concept for submission for the 2018-2019 TCP cycle.	The Veterinary Services and the two Public Health Institutes	Rule book of the organisation of the official control of animal products intended for human consumption. Equipped veterinary labs. Trained staff.	2018 - 2019	TBD	TBD
Transboundary suppression of Mediterranean fruit fly integrating the Sterile Insect Technique (SIT) with other control methods in the Neretva Valley	Consider developing the project concept for submission for the 2018-2019 TCP cycle.	The Veterinary Services and the two Public Health Institutes	Enhanced capacity to reduce Mediterranean fruit fly population	2018 - 2019	TBD	TBD
Radon mapping and monitoring	Consider developing the project concept for submission for the 2018-2019 TCP cycle.	Technical support organizations licensed for this practice by the regulatory body	Enhanced capacity for radon monitoring	2018 - 2019	TBD	TBD

Sustainable energy development and capacity building in energy planning	Consider developing the project concept for submission for the 2018-2019 TCP cycle.	TBD	Increased capacity for the development of a national strategy and energy plan	2018 - 2019	TBD	TBD
Strengthening regulatory infrastructure	Consider developing the project concept for submission for the 2018-2019 TCP cycle.	SRARNS	Enhanced technical capacity of the SRARNS	2018 - 2019	TBD	TBD

TBD – to be determined

ANNEX 4. Legislation and Regulations

The Law on Radiation and Nuclear Safety (Official Gazette No. 88/07) establishes an adequate basis and the legal framework for the radiation and nuclear safety system in Bosnia and Herzegovina.

Based on the Law the following regulations have been published:

- Regulation on notification and authorization of the practices with sources of the ionizing radiation (Official Gazette B&H No. 66/10);
- Regulation on the requirements for trading and use of radiation sources (Official Gazette B&H No. 66/10);
- Regulation on inspection in the field of radiation and nuclear safety (Official Gazette B&H No. 66/10);
- Regulation on radiation protection for medical exposure (Official Gazette B&H No. 13/11);
- Regulation for radiation protection of workers and general population (Official Gazette B&H No. 102/11);
- Regulation on categorization of radiation threats (Official Gazette B&H No. 102/11);
- Regulation on the authorization of legal persons who perform the medical examinations and the manner of conducting medical examination of persons occupationally exposed to ionizing radiation (Official Gazette B&H No. 25/12);
- Regulation on the control of high-activity sealed radioactive sources and orphan sources (Official Gazette B&H No. 62/12);
- Regulations on keeping records of legal persons performing activities with sources of ionizing radiation (Official Gazette B&H" No. 67/12);
- Regulations on the Transport safety of radioactive material (Official Gazette B&H" No. 96/12);
- Regulation on the Security of Nuclear Material and Radioactive Sources (Official Gazette B&H" No. 85/13);
- Decision on the requirements for legal entities to perform technical services (Official Gazette B&H No. 13/11);

ANNEX 5. International Instruments concluded with or under the Auspices of the IAEA to which Bosnia and Herzegovina is a Party

Multilateral Agreements

Reg.No	Title	In Force	Status
P&I	Agreement on the Privileges and Immunities of the IAEA	2009-06-11	acceptance: 2009-06-11
VC	Vienna Convention on Civil Liability for Nuclear Damage	1992-03-01	succession: 1998-06-30
VC/OP	Optional Protocol Concerning the Compulsory Settlement of Disputes		Non-Party
CPPNM	Convention on the Physical Protection of Nuclear Material	1992-03-01	succession: 1998-06-30
NOT	Convention on Early Notification of a Nuclear Accident	1992-03-01	succession: 1998-06-30
ASSIST	Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency	1992-03-01	succession: 1998-06-30
JP	Joint Protocol Relating to the Application of the Vienna Convention and the Paris Convention		Non-Party
CNS	Convention on Nuclear Safety	2010-09-19	accession: 2010-06-21
RADW	Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management	2012-10-31	accession: 2012-08-02
PVC	Protocol to Amend the Vienna Convention on Civil Liability for Nuclear Damage	2013-06-01	accession: 2013-03-01
SUPP	Convention on Supplementary Compensation for Nuclear Damage		Non-Party
RSA	Revised Supplementary Agreement Concerning the Provision of Technical Assistance by the IAEA (RSA)	2009-09-08	Signature: 2009-09-08
RCA	Third Agreement to Extend the 1987 Regional Co-operative Agreement for Research, Development and Training Related to Nuclear Science and Technology (RCA)		Non-Party
CoC	Code of Conduct on the Safety and Security of Radioactive Sources		BOH have made political commitment to the CoC
IEofRS	Supplementary Guidance on the Import and Export of Radioactive Sources		BOH have made political commitment to the IEofRS

Safeguards Agreements

Reg.No	Title	In Force	Status
CSA	Agreement between Bosnia and Herzegovina and IAEA for the Application of Safeguards in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons	2013-04-04	Ratification 2013-02-21
AP	Protocol Additional to the Agreement between Bosnia and Herzegovina and IAEA for the Application of Safeguards in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons	2013-07-03	Ratification 2013-06-13

ANNEX 6. Analytical Inputs for Bosnia and Herzegovina 2014-19

The following document links CPF planned activities for Bosnia and Herzegovina 2014-19 with national Millennium Development Goal (MDG) targets (Annex I), UNDAF 2010-14 (see Annex II) and programmatic work of current and potential IAEA partners at country level (see Annex III). It also summarizes past projects, achievements and Counterparts (see Annex IV).

Summary of Findings *(see subsequent Annexes for detailed information)*

Thematic Area	CPF Planned Activities	Links with MDGs *(Annex I)*	Links with UNDAF	Relevant Partners *(Annex II)*	Summary of Past Counterparts *(Annex III)*
1. Health	• Improved QA/QC system for diagnostic radiology, radiotherapy, nuclear medicine.	X	**Outcome 2.3:** Basic health and education, social protection and employment service providers are better able to ensure access to quality services for socially excluded and vulnerable groups, including marginalised rural poor.	**WHO / PACT** **IARC**[§]	**2 completed project with** i University Clinical Center Banja Luka ii Clinical Center University of Sarajevo iii Radiation Protection Center; Institute for Public Health
2. Environment	• Strengthen infrastructure of the laboratories for environmental monitoring • Training of personnel to perform complex measurement procedures.	**Target 7.A**: To integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources.	**Outcome 3.2.:** Government has increased capacity to reduce environmental Degradation and promote environmentally friendly actions and sustainable natural, and cultural resource utilisation	**UNEP** **UNESCO**	**1 project** Public Health Institute of Republic of Srpska; Ministry of Health of the Republic of Srpska

[§] International Agency for Research on Cancer

ANNEX I: CPF Links with National MDG Targets					
Thematic Area	**CPF Planned Activities**	**Links with National MDG Targets**	**National MDG Targets**		
			Baseline/Year	**Status/Year**	**2015 Target**
1. Health	• Improved QA/QC system for diagnostic radiology, radiotherapy, nuclear medicine.	X	X	X	X
2. Environment	• Strengthen infrastructure of the laboratories for environmental monitoring • Training of personnel to perform complex measurement procedures.	**Target 7.A**: To integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources.	Limited progress has been made in MDG7 Environment		

ANNEX II: CPF Links with UNDAF (2010-2014) Priorities			
Thematic Area	**CPF Planned Activities**	**Links with UNDAF Priorities**	**Potential Partners via UNDAF**
1. Health	• Improved QA/QC system for diagnostic radiology, radiotherapy, nuclear medicine	**Outcome 2.3:** Basic health and education, social protection and employment service providers are better able to ensure access to quality services for socially excluded and vulnerable groups, including marginalised rural poor.	UNICEF, UNFPA, UNHCR, IOM, UNDP, UNV, UNESCO, IFAD
2. Environment	• Strengthen infrastructure of the laboratories for environmental monitoring • Training of personnel to perform complex measurement procedures.	**Outcome 3.2.:** Government has increased capacity to reduce environmental Degradation and promote environmentally friendly actions and sustainable natural, and cultural resource utilisation	UNDP, UNV, UNEP, UNESCO, UNECE, UNIDO

ANNEX III: CPF Links with Other Partners			
Thematic Area	**CPF Planned Activities**	**Relevant Partners & Programmatic Links**	**Partner Contact**
1. Health	• Improved QA/QC system for diagnostic radiology, radiotherapy, nuclear medicine.	**WHO / IAEA PACT** • Build partnerships with cancer-related organizations for all aspects of cancer. • Mobilize resources to assist with the development/implementation of radiation medicine capacities for national cancer control programme. • Ensure effective and sustainable transfer of radiation medicine technologies / knowledge.	**Ms. Nelly Enwerem-Bromson,** Director, Division of PACT, TC, IAEA, +43-2600-21360, N.Enwerem-Bromson@iaea.org **Ms. Mina Brajovic**, Head of WHO Country Office, BRM@euro.who.int
		IARC *(specialized cancer agency of WHO)* • Provides education, training and fellowships forcancer researchers and health professionals to develop capacities for cancer surveillance, detection, and prevention at local level.	**Ms. Anouk Berger,** Head of Education and Training Group, +33(0)4 72-73-8485, etr@iarc.fr
2. Environment	• Strengthen infrastructure of the laboratories for environmental monitoring • Training of personnel to perform complex measurement procedures.	**IAEA / UNEP Partnership Agreement (2014-18)** • **Marine ecosystems management:** marine and ocean acidification (Cartagena Convention) monitoring programmes focused on capacity building, quality assurance, implementation, assessment and reference methodologies for chemicals and radioactive contaminants.	**IAEA/UNEP Partnership Focal Point:** **Ms. Susanne Nebel,** Programme Planning Officer, TC, IAEA, +43-1-2600-22429, S.Nebel@iaea.org
		UNEP "Regional Seas Programme for the Mediterranean: The Mediterranean Action Plan" (Barcelona Convention) • Assess / control marine pollution, and protect and sustainably manage marine/coastal resources through prevention and reduction of pollution. • Strengthen regional cooperation.	**Mediterranean Action Plan (MAP)** +30 10 72 73 100 unepmedu@unepmap.gr or info@unepmap.gr

Annex IV: Past Projects, Achievements & Counterparts (*2007-present*)				
Thematic Area	**Current CPF Activities**	**Project, Year & FoA**	**Achievements**	**Counterpart(s)**
1. Health	• strengthen capacities for the practice of medical physics in diagnostic radiology through improvement in quality assurance and control	**BOH6009:**Strengthening Medical Physics Capacity in Diagnostic Radiology (2007-008) **BOH6011:**Strengthening Medical Physics Capacity in Diagnostic Radiology - Phase II (2009-12) **FoA:** (6H) Diagnostic Radiology	• Capacity of medical physics in BiH was strengthened • education system for medical physicists in diagnostic radiology was established at the University of Sarajevo through master degree courses in medical physics. • National guidelines for medical physics practice in radiology are being implemented • radiologists and radiographers benefited from (i) enhanced film/screen mammography practice and (ii) the introduction of the concept of clinical audit	**Mr Zlatko Vucina** **Mr Jovica Bosnjak** **Mr Sasa Vujnovic** **Mr Adnan Beganovic** **Mr Samir Celigija** i University Clinical Center Banja Luka ii Clinical Center University of Sarajevo ii Radiation Protection Center; Institute for Public Health
2. Environment	• strengthening the capabilities of the existing environmental monitoring • consolidate baseline data on contamination of the environmental with radionuclides	**BOH2002:**Monitoring of Radioactivity in the Environment (2003-04) **FoA:**(2C) Radioanalytical Techniques	• Public Health Institute of the Republic of Srpska has established environmental monitoring programmes that measure radiation fields and radionuclide activity concentrations in environmental samples that are relevant to human exposure, primarily in drinking water, air, agricultural and natural foodstuffs and in bioindicators that concentrate. • The Radiation Protection Centre's capacity for effective environmental radiation monitoring is now capable of monitoring environmental radiation at low levels and measuring environmental samples such as soil, food, air, fallout and water samples for radionuclide activity concentrations.	**Mr Zlatko Vucina** **Mr Marko Lalic** **Mr Slavko Zupljanin** i. Institute for Public Health of Federation of Bosnia and Herzegovina i. Public Health Institute of Republic of Srpska; Ministry of Health of the Republic of Srpska i. Institute of Protection, Ecology and Informatics