

Format for Biennial Reports by UNESCO's Water-related Centres on activities related to the IHP in the period (June 2012- May 2014)

1. Basic information on the centre

Name of the Centre		IRTCUD – International Research and Training Center on Urban Drainage
Name of Director		Prof.Dr. Jovan Despotovic
Name and title of contact person (for cooperation)		Ljiljana Jankovic, Dipl. Eng
E-mail		irtcud@hikom.grf.bg.ac.rs
Address		Bulevar Kralja Aleksandra 73 P.O.Box 35-42; 11120 Belgrade Serbia
Website		https://hikom.grf.bg.ac.rs/irtcud/
Location of centre		city/town Belgrade country Serbia
Geographic orientation *		<input checked="" type="checkbox"/> global <input type="checkbox"/> regional
Region(s) (for regional centres)		
Year of establishment		1986
Year of renewal assessment		In progress
Signature date of most recent Agreement		October 1989
Themes Of activities during reporting period	Focal Areas ♦	<input checked="" type="checkbox"/> groundwater <input checked="" type="checkbox"/> urban water management <input checked="" type="checkbox"/> rural water management <input type="checkbox"/> arid / semi-arid zones <input type="checkbox"/> humid tropics <input type="checkbox"/> cryosphere (snow, ice, glaciers) <input checked="" type="checkbox"/> water related disasters (drought/floods) <input type="checkbox"/> Erosion/sedimentation, and landslides <input type="checkbox"/> ecohydrology/ecosystems <input type="checkbox"/> water law and policy <input type="checkbox"/> social/cultural/gender dimension of water <input type="checkbox"/> transboundary river basins/ aquifers <input checked="" type="checkbox"/> mathematical modelling <input checked="" type="checkbox"/> hydroinformatics <input type="checkbox"/> remote sensing/GIS <input checked="" type="checkbox"/> IWRM <input checked="" type="checkbox"/> Watershed processes/management <input type="checkbox"/> global and change and impact assessment <input checked="" type="checkbox"/> mathematical modelling <input checked="" type="checkbox"/> water education <input checked="" type="checkbox"/> water quality <input type="checkbox"/> nano-technology <input checked="" type="checkbox"/> waste water management/re-use <input type="checkbox"/> water/energy/food nexus <input checked="" type="checkbox"/> water systems and infrastructure <input type="checkbox"/> other: (please specify) <u>networking for water research</u>
	Scope of Activities ♦	<input checked="" type="checkbox"/> vocational training <input checked="" type="checkbox"/> postgraduate education <input checked="" type="checkbox"/> continuing education <input type="checkbox"/> public outreach <input checked="" type="checkbox"/> research <input checked="" type="checkbox"/> institutional capacity-building <input checked="" type="checkbox"/> advising/ consulting

* check on appropriate box

♦ check all that apply

		X software development X data-sets/data-bases development <input type="checkbox"/> other: (please specify) _____
Support bodies ¹		Faculty of Civil Engineering, University of Belgrade
Hosting organization ²		
Sources of financial support ³		
Existing networks and cooperation ⁴		IRTCUD network of regional centres: <ul style="list-style-type: none"> • Centre for the Cold Climates (Trondheim, Norway) • Centre for Humid Tropics (Porto Alegre, Brazil) • Centre for Arid and Semiarid Climates (Cairo, Egypt) • RCUWM – Tehran, Iran CUWs (Centres for Urban Water)
Governance		X director and governing board X other: (please specify) <u>Serbian Committee for UNESCO IHP</u> Link to election of board members to the IHP Intergovernmental Council (IGC) and hosting country IHP National Committee Frequency of meetings: once every year X Existence of UNESCO presence at meetings (occasional)
Institutional affiliation of director		
Number of staff and types of staff		total number of staff (full-time, or equivalent) : <u>32</u> (Host Institution – University of Belgrade-Faculty of Civil Engineering-Institute of Hydraulic and Environmental Engineering) number of staff who are water experts: <u>29</u> number of visiting scientists and postgraduate students: <u>40</u>
Annual turnover budget in USD		cca 70.000

2. Activities undertaken in the framework of IHP in the period June 2012 – May 2014

2.1 Educational activities (i.e., those with accreditation) that directly contributed to the IHP-VII/VIII (Appendix-1 and 2) and WWAP
Please include here those activities which led to accreditation of degrees, or those held in formal school settings.

Postgraduate studies in Water Resources and Environmental Management, in a framework of EDUCATE project, started in December 2007. The EDUCATE! project (Building the Future of Transnational Cooperation in Water Resources in South East Europe) was implemented in a framework of the EU INTERREG CADSES programme.

The idea of the project was initiated within and supported through UNESCO's Reconstruction of Scientific Cooperation in SEE Programme. Initial idea came from the event organized by UNESCO-Europe, Venice, 24th -27th February 2001. Two workshops were held afterwards - one in

¹ please specify bodies that cover the operational costs of the centre, and other essential costs such as salaries and utility bills, and that provide institutional support to ensure centre's sustainability

² if different from support bodies

³ please specify sources of main budgetary and extrabudgetary funds to implement projects

⁴ please write international networks, consortiums or projects that the centre is part of, or any other close links that the centre has with international organizations or programmes, which are not already mentioned above

UNESCO HQ, Paris, from 30rd June to 1st July 2002, and one in the University of Belgrade, 19th – 20th November 2004 resulted in gathering of partner universities ready for collaboration in the transnational programme.

The overall objective of the project is to assist the regional transnational cooperation on Water Resources Management and Environmental Protection. This is achieved by shaping the future policy makers, while at the same time providing training for current environmental policy makers through the postgraduate educational programme and training courses for government officials and industry. The project aims towards a long-term, continuous professional capacity building which will form the basis for long-term collaboration in the area and ultimately lead to a more integrated region.

The project partners involved in the project are the following:

- National Technical University of Athens, Greece – School of Civil Engineering and School of Chemical Engineering
- University of Ljubljana, Faculty of Civil and Geodetic Engineering, Slovenia
- Technical University of Civil Engineering Bucharest, Romania
- University of Belgrade, Faculty of Civil Engineering, Serbia
- IRTCUD, Serbia

The postgraduate course in Water Resources and Environmental Management is a flexible, distance learning programme based on both – e-learning and traditional way of lecturing. The students gather at their host university several times during the course: introductory week at the beginning of the course, examination for each thematic area, at a half of the course for definition of thesis and at the end of the course for presentation of thesis. Lectures and tutorials are developed in English. Duration of the course is two calendar years.

The course programme is organized as a pedagogic continuum and consists of four thematic areas:

- Thematic Area 1 presents introduction of the course and is focused on scientific background in water resources and ecology
- Thematic Area 2 targeted on integrative concepts of urban water management, including water supply and storm and waste waters
- Thematic Area 3 includes issues of catchment and environmental management by utilizing hydro-informatics tools, including distributed hydrologic models, advanced optimization and geostatistics
- Thematic Area 4 focuses on policy, legislation, decision-making and environmental assessment with an emphasis on the Water Framework Directive (WFD), as well as on other advanced topics

A research thesis comes as a follow up of the thematic areas.

In addition to the postgraduate course, a number of seminars on additional specialized topics are available to professionals from Government and Industry (held in the neighboring countries Romania and Slovenia).

The first generation completed the studies in December 2009 when presentation of theses was organized in Belgrade, Serbia. Currently the sixth generations have been participating in the studies.

Accreditation process for the particular studies at the University of Belgrade has been completed.

2.2 Research activities that directly contributed to the IHP-VII and/or IHP-VIII activities

Please include research/applied projects outputs such as publications that directly contributed to the IHP-VII/VIII and WWAP objectives

Research activities for the IHP phase VIII area under preparation. Prof. Jovan Despotovic is a member of the Working group for the implementation of the IHP phase VII.

- 2.3 Training activities that directly contributed to the IHP-VII/VIII and WWAP objectives
In a framework of the meetings held in Russia, Azerbaijan and Kazakhstan, participation of the National Committees in the IHP VIII phase have been discussed.

3. Collaboration and linkages

- 3.1 Participation in major international networks, programmes, partnerships with other UN or other International Agencies, media and professional bodies
From its establishment IRTCUD activities were done through cooperation with UNESCO and other UN organizations (UNEP, UNDP, and UNIDO), professional institutions (IAHR, IAWPRC, IAHS), World Meteorological Organization (WMO), universities and research institutions all over the World.

IRTCUD has a role of global coordinator of the regional IRTCUD Centres for the Cold Climates (Trondheim, Norway), Humid Tropics (Porto Alegre, Brazil) and Centre for Arid and Semiarid Climates established in the Regional Center of Research and Studies of Water Ethics (Cairo, Egypt). Because of IRTCUD (Belgrade)'s lack of space most of activities had to be "decentralized".

Within a framework of INTERREG III Programme, IRTCUD is involved in the network of four SEE countries working together on the project "Building the Future of Transnational Cooperation in Water Resources in South East Europe". Initially the network included partners from all former Yugoslav republics, Bulgaria, Romania, Greece, Albania, Turkey and Cyprus. The initial activity of the network is the above mentioned EDUCATE programme in which the following partners took place: Greece (National Technical University of Athens), Romania (Technical University of Bucharest), Slovenia (University of Ljubljana) and Serbia (University of Belgrade and IRTCUD).

IRTCUD members were the initiators and were either direct organisers or sponsors / book editors of all of the the UDM (Urban Drainage Modelling) series of 8 international conferences which are held every three years under auspices of the Joint Committee for Urban Drainage of IAHR (International Association for Hydraulic Research and IWA (international Water Association). Previous two conferences in the series were held at in Melbourne, Australia (2006) and in Tokyo, Japan (2009). The last conference was held in September 2012 in Belgrade and was directly organised by IRTCUD.

The 9th International Conference on "Urban Drainage Modelling" (UDM) was held in Belgrade, Serbia, in 2012 from 4 to 7 September. This is a Specialized Conference, an IWA event organized by Joint IAHR/IWA Committee on Urban Drainage (JCUD). The conference was a tribute to Prof. Maksimovic who has been the spiritus movens of the whole UDM conference series that started back in 1986 in Dubrovnik, former Yugoslavia, UDM conference topics are traditionally related to modelling urban drainage systems and interactions with other urban water systems and urban/suburban environment. The conference is designed to bring together specialists, researchers and practitioners, to exchange experience, demonstrate present potentials, improve the reliability of urban drainage modeling and to set-up the stage for its future developments. The topics are:

- Data issues (data availability, reliability and uncertainty; climate change and urban drainage systems, hydroinformatic support to urban drainage modeling, etc.)
- Modelling (urban stormwater and flood analysis; model and parameter identification and propagation of uncertainty; urban runoff quality, etc.)

- Applications (urban floods forecasting; interaction of pluvial and fluvial floods in urban areas; rainfall forecast; etc.)
- Management (stormwater and urban drainage management; risk analysis in urban drainage management; outlook for the urban drainage future; etc.)
- Special topics (UDM under extreme conditions; urban hydro-ecology and urban amenities; performance trends, indicators and life span assessment; etc.)

More than 200 participants took part at the conference.

Conference web site could be found at <http://hikom.grf.bg.ac.rs/9UDM/>

Proceedings "Urban Drainage Modelling – Extended Abstracts of the Ninth International Conference on Urban Drainage Modelling, Belgrade, Serbia, 4-6 September 2012", edited by D.Prodanovic and J.Plavsic, ISBN 978-86-7518-155-2.

IRTCUD applied for the project in a frame of the Programme Participation 2012-2013: "The treasures of water resources and historical heritage", that will be implemented in Natural and Historical Sites in the following countries: Serbia, Croatia, Bosnia and Herzegovina, FYRO Macedonia, Bulgaria - in connection with Roman times

- 3.2 Participation in meetings related to the IHP and UNESCO (e.g., the UNESCO General Conference, the UNESCO Executive Board, the IHP Intergovernmental Council and/or other meetings organized by IHP)

IRTCUD has a role of global coordinator of the regional IRTCUD Centres for the Cold Climates (Trondheim, Norway), Humid Tropics (Porto Alegre, Brazil) and Centre for Arid and Semiarid Climates established in the Regional Center of Research and Studies of Water Ethics (Cairo, Egypt).

IRTCUD and the IHP National Committee organized celebration of the World Water Days 2013 and 2014.

World Water Day 2013 was organized at the Faculty of Civil Engineering, University of Belgrade. Main themes of the gathering were:

- Cooperation in the field of water
- Legislation related to water area
- Declaration on water resources in the Republic of Serbia
- Initiative for project "Evaluation of water resources in Serbia"
- Report on Serbian Committee for UNESCO IHP
- Lecture given by Dr. Nesa Ilic: "Capabilities and limitations of optimization models for operating the reservoirs - Examples of studies from Canada"

World Water Day 2014 was organized at the Faculty of Civil Engineering, University of Belgrade. Main themes of the gathering were:

- Water and Energy
- Water Act, the strategy and tactics of implementing the concept of integrated water management, as a basis for the development of Serbia, based on contemporary and realistic assessment of water resources and potentials
- Declaration on water resources in the Republic of Serbia

Prof. Jovan Despotovic participated at the 50th session of the IHP Bureau, held in March/April 2014 in Paris.

Prof. Jovan Despotovic participated at the 49th session of the IHP Bureau, held in June 2013 in Paris.

Prof. Jovan Despotovic participated at the Meeting of the IHP UNESCO National Committees from the Danubian Countries, 14th December 2012, Bucharest, Romania

Professors Jovan Despotovic and Marko Ivetic participated at the conference in Mexico City: "UNESCO Strategic and High - Level Meeting on Water Security and Cooperation". The meeting was held in December 2013. Active participation was taken in the session "Regional Spotlight Session Introductions and Presentations of Regional views and expectations for IHP VIII".

Professors Jovan Despotovic and Marko Ivetic participated at the meeting "UNESCO Strategic and High-Level Meeting on Water Security and Cooperation", held in September 2013 in Nairobi, Kenya

Prof. Despotovic participated in the VII Hydrological Congress, St. Petersburg, 19 - 21 November 2013 in the following ways:

1. Representing two papers:
 - Management of rainfall runoff process including quality aspects, in 7 steps- From cloudy, stochastic sky to safety of traffic and people, and rainfall harvesting, by Prof. Jovan Despotovic, Dr. J. Plavsic, Dr. N. Jacimovic, Mr. D. Pavlovic, A. Todorovic and Lj. Jankovic
 - Networking for sustainable education as the basis for integrated water resources management implementation from state level to small settlements, by Prof. Jovan Despotovic, Marko Ivetic and Lj. Jankovic
2. NSG IHP UNESCO National representatives discussing the IHP Phases VIII contents. Lots of interests have been shown, including the information given from J. Culmann, on plans and visions for the next steps for implementation of it.

Professors Jovan Despotovic and Marko Ivetic participated at the CATEF 2013 – Caspian International Aqua Technologies Exhibition and Forum, April 2013, Baku, Azerbaijan, in the following ways:

1. Representing two papers:
 - Sustainable education on the integrated water resources management, by Prof. Jovan Despotovic, Prof. Marko Ivetic and Lj. Jankovic
 - Networking and education in the field of water, by Marko Ivetic and Lj. Jankovic
2. Exhibition, together with Baku State University, Azerbaijan University of Architecture and Construction, JSC AZERSU.

Professors Jovan Despotovic and Marko Ivetic participated at the CATEF 2014 – Caspian International Aqua Technologies Exhibition and Forum, April 2014, Baku, Azerbaijan.

Prof. Despotovic participated at the Regional Cooperation, Meeting „Capacity Building of National Commissions for UNESCO of South East Europe – Enhancing Regional Cooperation“, 18-19 March, 2014, Belgrade

Prof. Despotovic participated at the Conference and exhibition – Budapest Water Summit "Building Peace and development through water security", held in October 2013, Budapest, Hungary. Prof. Despotovic had a lecture as a Chair of the Serbian National Committee for UNESCO IHP. During the event UNESCO publication "Free Flow – Reaching Water Security through cooperation" was presented. One paper " Application of water directives in small settlements" was prepared by IRTCUD members.

Prof. Despotovic participated the meeting organized by German IHP/HWRP Secretariat – The first meeting of the working group supporting the implementation of IHP-VIII, Koblenz, 10-12 December 2012.

Prof. Despotovic is a member of the World's Large Rivers Initiative WLRIS Task Force.

3.3 Collaboration and networking with other UNESCO category 1 or 2 institutes/ centres

- 3.3.1 cross-appointment of directors of the category 1 or 2 institutes or centres on the governing board

- 3.3.2 exchange of information on activities such as training/educational materials, and funding opportunities
 - 3.3.3 exchange of staff, most notably professionals and students
 - 3.3.4 implementation of joint activities, such as workshops, conferences, training programmes, joint projects, field visits, software and data sharing, knowledge exchange and publications
- 3.4 Relationships with the UNESCO field and regional office whose jurisdiction covers the country of location
Participation of Prof. Jovan Despotovic at the Meeting on Connecting Policy and Science through Innovative Knowledge Brokering in the field of Water Management and Climate Change.
- 3.5 Relationship with the UNESCO National Commission and the IHP National Committee in the country of location and with other organizations of other countries
The cooperation with the National Commission for cooperation with UNESCO (which operates within the Ministry of Foreign Affairs was correct and fruitful. Although the Commission had not resources to provide financial support to the Centre, it provided a lot of logistic and administrative support to the Center especially in the phase of its re-establishment.
Prof. Despotovic is a member of the National Commission for Cooperation with UNESCO.
Serbian National Committee for cooperation with IHP was established in May 2010 under the umbrella of the National Commission. Vision of the National Committee is to enhance cooperation with IHP relying on professional capacities of Serbian experts in water sector and priorities of UNESCO in which water remains the most important issue. The National Committee has ten members of whom two come from IRTCUD (Prof. Marko Ivetic and Prof. Jovan Despotovic). The president of the National Committee for cooperation with IHP is IRTCUD member (Prof. J. Despotovic). Scientific Committee of the Serbian National Committee for UNESCO IHP was established with the following members: Jasna Plavsic (University of Belgrade – Faculty of Civil Engineering), Slobodanka Blagojevic (Faculty of Civil Engineering and Architecture - University of Niš), Marina Babic Mladenovic (Jaroslav Cerni Institute for the Development of Water Resources), Stanimir Kostandinov (University of Belgrade – Faculty of Forestry) and Ivana Ivancev Tumbas (Faculty of Sciences, University of Novi Sad).
The cooperation with the previous National Commission for cooperation with UNESCO was very bad (almost non-existent). For a number of years the Commission was “privatized” and there was not means of pursuing IRTCUD’s agenda through the Commission. The situation has changed after the recent creation of the new Commission which is more cooperative and supportive.
However the big problem of the “lack of space / infrastructure” remains to be dealt with. IRTCUD has no proper office space to work from. The Faculty of Civil Engineering through the Institute of Hydraulic and Environmental Engineering provides the “basics” / share of space and staff. The Faculty has made available about 250 m² of the space in a cellar which is the need for complete refurbishment. Several attempts to get funding from the relevant central (Republic of Serbia) and local government (Belgrade City Council) failed. It remains to be realized the recent promise of the Ministry of Science and Education. Additional efforts have been made toward realization of this initiative through preparation of main design for refurbishment of the office space and commencement of procedure for the project execution.
- 3.6 Relationship with other UNESCO-related networks, such as UNESCO Clubs, ASPnet, and UNESCO chairs

Close cooperation with Serbian National Committee for UNESCO IHP.

Fruitful connections with ex Soviet countries, particularly with IHP UNESCO Committees from Azerbaijan, Kazakhstan and Russia.

4. Communication

4.1 Communication and knowledge dissemination activities undertaken in the framework of IHP

Cooperation with the Black Sea University Network (BSUN), Romania, is confirmed through joint participation in project proposal for master studies "Education and Networking in the field of Water - EdNeW" submitted in a framework of TEMPUS IV 6th Call for proposals.

Prof. Despotovic, as a president of the National Committee for UNESCO IHP, has been actively participated in all activities related to preparation of the VIII phase of IHP programme.

4.2 Policy documents and advice

5. Update on Centre Operations

5.1 Membership of the Board of Governors between designated period

Director: Prof. Dr. Jovan Despotovic

Local Coordinators: Prof. Dr. Marko Ivetić, Prof. Dr. Dusan Prodanovic, Dr. Jasna Plavsic, Dr. Milos Stanic

Programme Coordinator: Ljiljana Janković

Unfortunately the creation of the Board of Governors which was planned after the Centre's restart did not materialize, because of the tardiness (delay) in refurbishment of the office and research space which is still waiting for the formal approval and funding from the Ministry of Science and Technological Development.

5.2 Key decisions made (attach minutes of meetings)

- The decision made on March 20th, 2014, which was reported to the IHP UNESCO Secretariat, of acceptance the reviewing procedures for the category 2 centres according to the "Implementation of the guidelines and criteria for category 2 institutes and centres approved in 33 c/Resolution 90"
- The decision on the official "restart" of the Centre during the International Workshop on the Reactivation of the IRTCUD Network held in Belgrade from 14th to 16th of March 2002. By the decision IRTCUD reassumed its role as a global coordinator of the regional IRTCUD Centres for the Cold Climates (Trondheim, Norway), Humid Tropics (Porto Alegre, Brasil) and of the intended Arid and Semiarid Climates Regional Center.
- Official visit of the UNESCO DG (Mr Koichiro Matsura) on 4th May 2004. Representatives of IRTCUD presented organization of the IRTCUD Network, principal achievements, publications issued, current initiatives in IHP VI programme and others. Problem of inadequate office space and possibilities for refurbishment of celar space at the Faculty of Civil Engineering, University of Belgrade were presented.

6. Evidence of the Centre's Impacts

- 6.1 Science Impacts (Major contributions to the science, technology, education, and regional and/or international cooperation in the field of water)
- The Urban Pluvial Flood Modelling methodology originated in IRTCUD in 90-ies of the last century and recently developed by IRTCUD/CUW/Imperial College London team has made the major breakthrough at the international scene. The AOFD methodology officially tested and approved by UKWIR (UK Water Industry Research)
 - Expertise in GIS support for hydroinformation systems and urban water systems developed in IRTCUD has been widely used in specific projects in Serbia and also in the region. As an example, it was used in the following projects:
 - GIS based improvement of distributed hydrological model of the Drina river: Development of GIS routines for automatic generation of SWAT input data files based on DEM, river, cover and network of meteorological stations (Ministry of Agriculture, Forestry and Water Management, Serbian Government)
 - Hydroinformation system "Vlasina" – hydrological simulation model: Development of hydrological simulation model for Vlasina hydro system using GIS tools based on 3DNet-Catch module (Hydro power plant Djerdap, Serbian Electropower Company)
 - Modelling of urban groundwater systems originated in IRTCUD has been used in the project "Urban groundwater systems management UGROW-an advanced simulation and modeling tool" which resulted in a book published in a framework of IHP 6 programme. IRTCUD member (Dr. Milos Stanic) is a coauthor of the chapters "UGROW-the Urban GroundWater modelling system" and "UGROW applications – Case Studies"
 - Analysis of the effects of the water transfer through the tunnel Fatnicko Polje-Bileca reservoir on the hydrological regime of Bregava River in Bosnia and Herzegovina (Electropower Company of Republic of Srpska)
 - Establishment of three experimental urban catchments aiming at a research of quantity and quality of runoff from impermeable surfaces. Two experimental catchments have been established in Serbia - Belgrade and Subotica, and one in Croatia – Rijeka. Also, under preparation is establishment of the fourth experimental catchment in the City of Baya in Hungary at the Danube river. This is a beginning of a networking of urban experimental catchments in the Region.
- 6.2 Knowledge Transfer Impacts (Major achievements in the dissemination of knowledge and technology transfer)
- IRTCUD/CUW coordinated development of UWETTT is available to UNESCO
 - Training of Trainers Workshop on Integrated Urban Water Management, Lahore, Pakistan, May 2007. Jointly organized by: PCRWR, RCUWM) – Tehran, UNESCO-IHP, UNESCO Tehran and UNICEF
 - Short course on Urban GroundWater (UGROW) Modelling System held at UNESCO Paris, 11th September 2007: Analysis of Interaction of Urban Water Systems with Groundwater Aquifer: A case study of the Rastadt City in Germany.
 - Cooperation with Hungarian Chamber of Engineers aiming at continual education of professionals from water field. Ongoing.
 - Short training courses for professionals from ministries (Romania) and water industry and environmental services (Slovenia) in a framework of EDUCATE. Started in 2007, ongoing
 - Short courses organized together with Association for Water Technology and Sanitary Engineering, aiming at continual education of professionals from water field. Ongoing.
 - Series of training courses for professionals on contemporary methods for design of systems for protection of rain water, aiming at continual education of professionals from water field. Jointly with Serbian

Chamber of Engineers. Organized in several regional centers of the Chamber in Serbia. Ongoing.

- Invited Lecture(s) at the Moscow State University Lomonosov on 24th December 2013, under the following titles:
 - Knowledge in the frame of the information, research and implementation of the IHP UNESCO, by Prof. Dr Jovan Despotovic,
 - Management of Rainfall runoff process including quality aspects in 7 steps - from cloudy, stochastic sky to safety of traffic, and rainfall harvesting, by the group of authors from the UB - FCE,
 - Networking for sustainable education aiming at integrated water resources management, by the group of authors from the UB - FCE, by the group of authors from the UB – FCE,
 - Optimal Management of complex water resources systems – An Introduction by Dr. Nesa Ilic
- Improved procedures and methodologies for design of the modern urban rainfall systems for highways and bridges such as Gazela bridge in Belgrade and bridges in a vicinity of Ostruznica and Obrenovac.

6.3 Policy Impacts (advice sought by government and other bodies and evidence of inputs into policy arena)

IRTCUD started project for the City of Belgrade “Integrated Management and Protection of Water Resources in Municipality of Belgrade” (Blue Regulative). The project is founded on EU Framework Directives and presents the most important legal instrument in water management field that is based on integrated environmental management and compatibility with development of economy, agriculture, water resources, transport, fishery, energy, trade and others. Completed in year 2012.

IRTCUD was involved in the Study regarding functioning of Belgrade sewerage system in irregular and extreme conditions. City of Belgrade has adopted the strategy for functioning of Belgrade sewerage system in irregular and extreme conditions based on this Study. Completed in year 2012.

7. Future activities that will contribute directly to IHP and/or to WWAP

7.1 Operational Plan (attach if available)

Operational plan for period 2015-2016 is based on core IRTCUD activities, specifically with those linked with programme themes of the eight phase of IHP. The plan could be summarized as follows:

a) Continued coordination and running of EDUCATE postgraduate study: The study currently has three generation of students of whom one generation will finish the study in autumn 2014 following presentation of thesis.

Also, short training courses for professionals from ministries and water industry and environmental services are available in a framework of EDUCATE.

b) Attempt to finally resolve the problem of the lack of office / research space:

Finding of solution for financing of the space at the Faculty of Civil Engineering University of Belgrade that will be used for IRTCUD needs. This issue is crucial for success of all planned activities and will enable expansion of current operations.

c) Legal aspects of the IRTCUD reassessment to be finished in year 2014.

d) Cooperation with other UNESCO category 2 centres;

Cooperation with UNESCO category 2 centres will continue in the future through exchange of training/educational materials, joint application for projects, participation in workshops and conferences.

e) Cooperation with other UNESCO IHP groups ;
IRTCUD member (Prof. Jovan Despotovic), Vice-Chair of the IHP UNESCO Council Bureau, has been actively participated in activities related to preparation and improvement of the programme of IHP VIII. Future cooperation with IHP National committees of other countries from II Group is foreseen.

f) Summer school for universities from Azerbaijan;
Summer school will be organized within the University of Belgrade during summer brake when lecturers and students are available. The premises of the Faculty of Civil Engineering, University of Belgrade will be used for execution of the summer school.

Three separate courses will be organized in the following fields:

- hydraulic and environmental engineering
- structural engineering
- architecture engineering

Partner Universities are as follows:

- University of Belgrade - Faculty of Civil Engineering
- University of Belgrade - Faculty of Architecture
- UNESCO Chair in Water for Ecologically Sustainable Developments
- IRTCUD - International Research and Training Centre for Urban Drainage, under UNESCO auspices

g) Education, research work incl. experimental polygon and measurements, in a joint Project with the Technical University at the Almaty.

h) Projects that will be implemented in the period in question:

- Scientific management of urban ground water based on GIS technique (National Scientific Funding of Serbia), Prodanovic, D.
- Assessment of environmental impacts of urban wetlands with using recycle water (National Scientific Funding of Serbia), Ivetic, M.
- MORE – Monitoring and Modelling of Rivers and Reservoirs - physical, chemical, biological and morpho-dynamic parameters, (Serbian Ministry of Science and Technological Development)
- Strategic project related to integrated water resources management in the city of Belgrade, financed by the City of Belgrade called "Blue Regulative" – II phases.

7.2 Strategic Plan linked with IHP-VIII (Appendix 2)
(attach strategic plan if available)

Not yet available, It will strongly depend on the success (or failure) to get the support from the Ministry for the refurbishment of the cellar space at the Faculty of Civil Engineering.

However, The emphasis in this period will be on the activities related to the **Theme 6: WATER EDUCATION, KEY FOR WATER SECURITY** of the IHPVIII.

This is very much important to prepare a participation within the **Theme 4: Water and Human Settlements of the future.**

The emphasis in this period will also be paid to the activities related to the **Theme 6: WATER EDUCATION, KEY FOR WATER SECURITY** of the IHPVIII.

In particular on the four focal areas as follows:

- Focal area 1.5 - Improve scientific basis for hydrology and water sciences for preparation and response to extreme hydrological events

- Focal area 3.1 - Improving governance, planning, management, allocation, and efficient use of water resources
- Focal area 5.4 - Urban Ecohydrology – storm water purification and retention in the city landscape, potential for improvement of health and quality of life
- Focal area 6.1 - Enhancing tertiary water education and professional capabilities in the water sector and
- Focal area 6.2 - Addressing vocational education and training of water technicians

8. Strategic Alignment with IHP-VIII

- 8.1 Focal areas within IHP-VIII the centre plans to contribute to and specific actions the centre will undertake to align its activities with the strategic plan for IHP-VIII (Please see Appendix-2)

9. Annexes

- 9.1 List of publications released by the centre (there can be overlap with those listed in 2.3 above)
- 9.1.1 Despotović, J., Janković, Lj. (2013). Application of water directives in small settlements, UNESCO publication "Free Flow – Reaching Water Security through cooperation", pages 123-125
- 9.1.2 Proceedings from 2nd Regional Rainfall Conference of the Balkans – Regional Rainfall and Climate Change, ISBN 978-86-7518-165-1, 2014
- 9.1.3 **Nine books** (four more to follow) published in the Urban Water Series initiated within the IHPVI, Series editors Č. Maksimović and J.A. Tejada-Guibert, starting with the book: Data Requirements for Integrated Urban Water Management". T.D. Fletcher and A. Deletić, ed. Book Series, Series ed. C. Maksimovic and Tejada-Guibert, J.A., Taylor and Francis, ISSN 1749 0790,
- 9.1.4 Maksimović, Č., Prodanović, D., Boonya-aroonnet, S., Leitão, J. P., Djordjević, S., and Allitt, R. (2009). Overland flow and pathway analysis for modelling of urban pluvial flooding. *Journal of Hydraulic Research*, 47(4):512-523.
- 9.1.5 J. P. Leitao, S. Boonya-aroonnet, D. Prodanović and C . Maksimović (2009) *The influence of digital elevation model resolution on overland flow networks for modelling urban pluvial flooding*, Water Science & Technology—WST, 60.12
- 9.1.6 Urban Water in Japan", Hooememeuer, F., ed. Urban Water Book Series, Series ed. Č. Maksimović, Taylor and Francis, June 2008,
- 9.1.7 Prodanović D.(2007) .Fluid Mechanics for Civil Engineering Students. Faculty of Civil Engineering University of Belgrade
- 9.1.8 Kapor, R. (2008), Hydraulics. Faculty of Civil Engineering University of Belgrade
- 9.1.9 Jovanovic, M. (2007), River Training Works – River Hydraulics and Morphology, Faculty of Civil Engineering University of Belgrade
- 9.1.10 Despotovic, J. (2009), Storm Water Channeling. Faculty of Civil Engineering University of Belgrade,

9.1.11 Editors: Kapor, R. and Ivetic, M. (2009), Proceedings of 15th Council of Serbian Association for Hydraulics Research. Faculty of Civil Engineering University of Belgrade

9.1.12 Despotovic, J., Jovanovic, Z., Plavsic, J. (2009). Drainage of bridges in urban areas. Gradjevinski calendar 2009, Union of Engineers and Technicians of Serbia

9.1.13 Proceedings of the Ninth International Conference on Urban Drainage Modelling, Belgrade, Serbia, 4-6 September 2012, Edited by Dusan Prodanovic and Jasna Plavsic

9.2 List of training courses conducted (there can be overlap with those listed in 2.1 above)

Postgraduate studies in Water Resources and Environmental Management , EDUCATE – Jointly with National Technical University of Athens, Greece, University of Ljubljana, Slovenia, Technical University of Civil Engineering Bucharest, Romania and University of Belgrade, Serbia. Started in 2007, ongoing

Short training courses for professionals from ministries (Romania) and water industry and environmental services (Slovenia) in a framework of EDUCATE. Started in 2007, ongoing

Short course on Urban GROundWater (UGROW) Modelling System , UNESCO Paris,

Joint training course on Urban Drainage with the University of Calabria, Italy, 15 June 2010

Training of Trainers Workshop on Integrated Urban Water Management, Lahore, Pakistan, May 2007. Jointly organized by: PCRWR, RCUWM) – Tehran, UNESCO-IHP, UNESCO Tehran and UNICEF

Several training courses on implementation of 3DNet software in Serbian companies

Short training courses on contemporary maintenance of water supply and sewerage systems. Jointly with Association for Water Technology and Sanitary Engineering

Series of training courses for professionals on contemporary methods for design of systems for protection of rain water. Jointly with Serbian Chamber of Engineers. Organized in several regional centers of the Chamber in Serbia.

Appendix-1

Overview of the Core Programme Themes of the Seventh Phase of the IHP (2008-2013) WATER DEPENDENCIES: SYSTEMS UNDER STRESS AND SOCIETAL RESPONSES

Theme 1: ADAPTING TO THE IMPACTS OF GLOBAL CHANGES ON RIVER BASINS AND AQUIFER SYSTEMS

Focal area 1.1 - Global changes and feedback mechanisms of hydrological processes in stressed systems

Focal area 1.2 - Climate change impacts on the hydrological cycle and consequent impact on water resources

Focal area 1.3 - Hydro-hazards, hydrological extremes and water-related disasters

Focal area 1.4 - Managing groundwater systems' response to global changes

Focal area 1.5 - Global change and climate variability in arid and semi-arid regions

Theme 2: STRENGTHENING WATER GOVERNANCE FOR SUSTAINABILITY

Focal area 2.1 - Cultural, societal and scientific responses to the crises in water governance

Focal area 2.2 - Capacity development for improved governance; enhanced legislation for wise stewardship of water resources

Focal area 2.3 - Governance strategies that enhance affordability and assure financing

Focal area 2.4 - Managing water as a shared responsibility across geographical & social boundaries

Focal area 2.5 - Addressing the water-energy nexus in basin-wide water resources

Theme 3: ECOHYDROLOGY FOR SUSTAINABILITY

Focal area 3.1 - Ecological measures to protect and remediate catchments process

Focal area 3.2 - Improving ecosystem quality and services by combining structural solutions with ecological biotechnologies

Focal area 3.3 - Risk-based environmental management and accounting

Focal area 3.4 - Groundwater-dependent ecosystems identification, inventory and assessment

Theme 4: WATER AND LIFE SUPPORT SYSTEMS

Focal area 4.1 - Protecting water quality for sustainable livelihoods and poverty alleviation

Focal area 4.2 - Augmenting scarce water resources especially in SIDS

Focal area 4.3 - Achieving sustainable urban water management

Focal area 4.4 - Achieving sustainable rural water management

Theme 5: WATER EDUCATION FOR SUSTAINABLE DEVELOPMENT

Focal area 5.1: Tertiary water education and professional development

Focal area 5.2: Vocational education and training of water technicians

Focal area 5.3: Water education in schools

Focal area 5.4: Water education for communities, stakeholders and mass-media professionals

Appendix-2

Overview of the Core Programme Themes of the Eighth Phase of the IHP (2014-2021) WATER SECURITY: ADDRESSING LOCAL, REGIONAL, AND GLOBAL CHALLENGES

THEME 1: WATER-RELATED DISASTERS AND HYDROLOGICAL CHANGE

- Focal area 1.1 - Risk management as adaptation to global changes
- Focal area 1.2 - Understanding coupled human and natural processes
- Focal area 1.3 - Benefiting from global and local Earth observation systems
- Focal area 1.4 - Addressing uncertainty and improving its communication
- Focal area 1.5 - Improve scientific basis for hydrology and water sciences for preparation and response to extreme hydrological events

THEME 2: GROUNDWATER IN A CHANGING ENVIRONMENT

- Focal area 2.1 - Enhancing sustainable groundwater resources management
- Focal area 2.2 - Addressing strategies for management of aquifers recharge
- Focal area 2.3 - Adapting to the impacts of climate change on aquifer systems
- Focal area 2.4 - Promoting groundwater quality protection
- Focal area 2.5 - Promoting management of transboundary aquifers

THEME 3: ADDRESSING WATER SCARCITY AND QUALITY

- Focal area 3.1 - Improving governance, planning, management, allocation, and efficient use of water resources
- Focal area 3.2 - Dealing with present water scarcity and developing foresight to prevent undesirable trends
- Focal area 3.3 - Promoting tools for stakeholders involvement and awareness and conflict resolution
- Focal area 3.4 - Addressing water quality and pollution issues within an IWRM framework - improving legal, policy, institutional, and human capacity
- Focal area 3.5 - Promoting innovative tools for safety of water supplies and controlling pollution

THEME 4: WATER AND HUMAN SETTLEMENTS OF THE FUTURE

- Focal area 4.1 - Game changing approaches and technologies
- Focal area 4.2 - System wide changes for integrated management approaches
- Focal area 4.3 - Institution and leadership for beneficitation and integration
- Focal area 4.4 - Opportunities in emerging cities in developing countries
- Focal area 4.5 - Integrated development in rural human settlement

THEME 5: ECOHYDROLOGY, ENGINEERING HARMONY FOR A SUSTAINABLE WORLD

- Focal area 5.1 - Hydrological dimension of a catchment– identification of potential threats and opportunities for a sustainable development
- Focal area 5.2 - Shaping of the catchment ecological structure for ecosystem potential enhancement – biological productivity and biodiversity
- Focal area 5.3 - Ecohydrology system solution and ecological engineering for the enhancement of water and ecosystem resilience and ecosystem services
- Focal area 5.4 - Urban Ecohydrology – storm water purification and retention in the city landscape, potential for improvement of health and quality of life
- Focal area 5.5 - Ecohydrological regulation for sustaining and restoring continental to coastal connectivity and ecosystem functioning

THEME 6: WATER EDUCATION, KEY FOR WATER SECURITY

- Focal area 6.1 - Enhancing tertiary water education and professional capabilities in the water sector
- Focal area 6.2 - Addressing vocational education and training of water technicians
- Focal area 6.3 - Water education for children and youth
- Focal area 6.4 - Promoting awareness of water issues through informal water education
- Focal area 6.5 - Education for transboundary water cooperation

KEY FACTS AND FIGURES ON SERBIA/UNESCO COOPERATION

1. **Membership in UNESCO:** since 20 December 2000
2. **Membership on the Executive Board:** not currently
3. **Membership on Intergovernmental Committees, Commissions etc.:**
 - Intergovernmental Council for the International Hydrological Programme (term expires in 2013), Vice-Chairperson: Mr Jovan Despotovic
 - Intergovernmental Bioethics Committee (term expires in 2013)
 - Intergovernmental Committee on World Heritage (term expires in 2015), Rapporteur : Ms Jasna Zrnovic
 - Intergovernmental Oceanographic Commission
4. **Highlights of the address of *Mr. Vuk Jeremić, Minister of Foreign Affairs, at the 36th session of the General Conference* (31 October 2011):**
 - Serbia "fully committed to an agenda of solidarity, cooperation, and mutual-assistance with the developing world - especially in the field of **education**. We are expanding our "**World in Serbia**" **Scholarship Fund**" for international student wishing to study at Belgrade University.
 - "We engage with developing countries on minimizing the impact of climate change on water resources. Through UNESCO's **International Hydrologic Program**, we have proposed to establish a **Category 2 Center for Water**, Sustainable Development and Adaptation to Climate Change."
 - "In addition to actively supporting UNESCO's two priorities - namely **Africa and gender equality** promotion - Serbia will increase its efforts to **safeguard at-risk patrimony** across the planet. It affects us most directly in our southern province of Kosovo and Metohija, home to four UNESCO World Heritage Sites in Danger, and Serbia is the state party responsible for their protection."
 - "I would like to salute UNESCO's strictly status-neutral work in **Kosovo**. UNESCO is not the forum for airing political disagreements—directly or through proxies. The holy sites of the Serbian Orthodox Church cannot belong to the so-called 'Republic of Kosovo.' Our bond with those sacred places is unquestionable and unbreakable."
 - "Serbia has presented its **candidacy** for a seat on the **UNESCO World Heritage Committee**."
5. **The Director-General's visits to Serbia:**
 - 2-3 September 2011: official visit, on the occasion of the 9th Regional Summit of the Heads of State of South-East Europe
6. **The former Director-General's visits to Serbia:**
 - 2-5 May 2004: official visit to Serbia and Montenegro

7. Permanent Delegation to UNESCO:

- Permanent Delegate: H. E. Mrs Zorica Tomic, Ambassador Extraordinary and Plenipotentiary (since 27 November 2009)
- Staff: Ms Marija Antonijevic, Counsellor; Mr Dragan Krneta, Technical and administrative assistant
- Previous Permanent Delegates: Mr Dragoljub Najman (September 2001 – November 2007), Mr Radomir Diklic, Ambassador to France (April 2001 – September 2001)

8. UNESCO Office: None. Serbia is covered by the UNESCO Regional Bureau for Science and Culture in Europe (BRESCE)

9. Commission of the Republic of Serbia for UNESCO:

- Date of establishment: established in 1950, re-established in 2001
- President: Mr Trivo Indjic (since October 2010)
- Secretary-General: Mrs Jasna Zrnovic (since July 2009) - previously, she was Deputy Permanent Delegate of Serbia to UNESCO.

10. Personalities linked to UNESCO's activities:

- Mr Jovan Despotovic, Vice-Chairperson of the Intergovernmental Council for the International Hydrological Programme (term expires in 2013)
- Intergovernmental Committee on World Heritage (term expires in 2015), Rapporteur : Ms Jasna Zrnovic

11. UNESCO Chairs: 5

- UNESCO Chair in Governance and Management of Higher Education, established at the Alternative Academic Educational Network (AAEN), Belgrade (2003)
- UNESCO Chair in Studies of Interculturalism, Art and Cultural Management and Mediation in the Balkans, established at the University of Arts in Belgrade (2004)
- UNESCO Chair in Development of Education Research and Institutional Building, established at the Centre for Education Policy, Belgrade (2008)
- UNESCO Chair in Entrepreneurial Studies and Research, established at the University of Novi Sad (2008)
- UNESCO Chair in Water for Ecologically Sustainable Development, established at the University of Belgrade (2012)

12. Associated Schools: 26 (18 primary and 6 secondary schools, and 2 vocational and technical institutions). Serbia joined the ASP Network in 1998.

13. Category 2 Institutes and Centres: 1

- International Research and Training Centre on Urban Drainage (IRTCUD), Belgrade (approved by the General Conference in 2007)

- The 187th session of the Executive Board approved Serbia's proposal to set up a Regional Category II Centre "*Water for Sustainable Development and Adaptation to Climate Change*" at the Institute for Water Resources in Belgrade.

14. UNESCO Clubs: 29 Clubs

15. Biosphere Reserves: 1

- Golija-Studenica (2001)

16. World Heritage Sites: 4 cultural sites

- Medieval Monuments in Kosovo (Decani Monastery, 2004; Patriarchate of Peć Monastery, Gračanica Monastery and the Church of the Virgin of Ljeviša, 2006), inscribed on the List of the World Heritage in Danger in 2006
- Stari Ras and Sopocani (1979)
- Studenica Monastery (1986)
- Gamzigrad-Romuliana, Palace of Galerius (2007)

17. Tentative List: 11 properties

- Djerdap National Park (2002)
- The Deliblato Sands Special Natural Reserve (2002)
- Mt. Sara National Park (2002)
- The Tara National Park with the Drina River Canyon (2002)
- The Džavolja Varos (Devil's Town) Natural Landmark (2002)
- Fortified Manasija Monastery (2010)
- Negotinske Pivnice (2010)
- Smederevo Fortress (2010)
- Caričin Grad – Iustiniana Prima, archaeological site (2010)
- Historical place of Bač and its Surroundings (2010)
- Stećak's - Medieval Tombstones (2011)

18. Intangible Heritage Lists: no elements

19. Creative Cities Network: no appointments

20. Memory of the World Register: 2 inscriptions

- Nikola Tesla's Archive (2003)
- Miroslav Gospel – Manuscript from 1180 (2005)

21. Legal instruments: 25 ratified and 13 non-ratified

- Convention on the Safeguarding of the Intangible Cultural Heritage: ratified (30 June 2010)
- Convention on the Protection and Promotion of the Diversity of Cultural Expressions: ratified (2 July 2009)
- International Convention against Doping in Sport: ratified (19 June 2009)
- Convention on the Protection of the Underwater Cultural Heritage: non-ratified

22. Anniversaries with which UNESCO is associated in 2012-2013: none

23. Participation Programme:

- 2012-2013: 12 project requests for a total amount of US\$ 374,513
- 2010-2011: 2 requests approved for a total amount of US\$ 46,100 ("Biodiversity Matters: Raising Awareness by Educational Tools in National Park Tara" and "Ecological Footprint : Analysis and Training") and emergency assistance following the earthquake for a total amount of US\$ 49,475

24. Fellowships: 4 fellowships awarded since 2007, for a total amount of US\$ 51,064

25. Payment of assessed membership fees for 2012-2013: assessment rate: 0.037%; contributions assessed for 2012: US\$ 51,946 and € 59,838

26. Voluntary contributions (expressed in US\$):

Year	2011	2010	2009	2008	2007	2006
Total	1,208	1,208	663	1,304	-	1,160

27. Representation within the Secretariat: under-represented

- 1 professional staff in geographical posts (min. 2, max. 4)