

**EXTERNAL REVIEW OF ACTIVITIES OF  
INTERNATIONAL RESEARCH AND TRAINING CENTRE ON URBAN DRAINAGE (IRTCUD)  
CATEGORY 2 CENTRE UNDER THE AUSPICES OF UNESCO**

Belgrade, Serbia

3-5 December 2019

**Prepared by:**

Dr. Elpida Kolokytha, (Dipl. Civil Eng., PhD)

Assoc. Professor

Head of Hydraulics & Environmental Engineering Dept.

School of Civil Engineering, AUTH, Greece

Aristotle University of Thessaloniki, GR

## **EXECUTIVE SUMMARY**

Over the past decades, UNESCO has established a number of category 2 centers (C2C) in the field of water science and management. These centers serve in their fields of specialization as international or regional centers and poles of expertise providing services and technical assistance to Member States, cooperation partners and the network of UNESCO field offices. In this context, water-related category 2 centers (WC2C) are expected to contribute directly to attaining the strategic objectives and programmatic priorities of UNESCO's International Hydrological Program (IHP).

The International Research and Training Centre On Urban Drainage (IRTCUD) in Belgrade, Serbia, is the second oldest UNESCO Center and one of the 37 UNESCO's water C2Cs. The International Research and Training Centre on Urban Drainage (IRTCUD) was established in 1989, following the decision of the General Conference of UNESCO at the 24<sup>th</sup> session in 1987 to establish an International Research and Training Center on Urban Drainage in (former) Yugoslavia under the auspices of UNESCO (24 C/5 Approved). The existing Agreement was signed in 1989. The Agreement's initial duration was until the end of 1989 with a clause allowing it to be "renewed for the further periods as agreed upon the Government and UNESCO", as stated in the agreement. After a request for alignment of the Agreement by UNESCO's Deputy Director-General in May 2019, the Government of Serbia, through the Ministry of Education, Science and Technological Development expressed its willingness to submit IRTCUD to evaluation, in order to renew the Agreement for the continuation of its activities.

UNESCO requires that Category 2 water-related Centers undergo periodic reviews. The main objectives of these reviews are to assess the Centers' performance with respect to their terms of reference and contributions to the UNESCO mandate. The principal outcome of the review is a recommendation as to whether the agreement between UNESCO and the host government should be renewed.

The evaluation of IRTCUD was conducted between 3-5 December 2019. Dr. Elpida Kolokytha was the appointed external reviewer. The purposes of the present review and evaluation were to assess the following:

- Alignment of the Center activities with the Agreement signed with UNESCO
- Alignment of the Center's activities with UNESCO strategies, objectives and priorities
- Quality of coordination and interaction with UNESCO Headquarters, and other UNESCO Centers

- Quality of partnership with the Serbian Government / public private partners
- Organizational arrangements, including management governance and reporting
- Human and financial resources
- The impact resulting from the Centers ' activities in Serbia and internationally
- The capacity and strategies of the Centre to share and disseminate knowledge.

More specifically

- to assess IRTCUD's performance with respect to its objectives and functions, as specified in the Agreement between UNESCO and the host Government, and in regard to its contribution to UNESCO's strategic program objectives and respective sectoral and UNESCO-IHP strategies, priorities, and themes.
- to assess the extent to which the agreement concerning IRTCUD is in conformity with the *Integrated Comprehensive Strategy for Category 2 Institutes and Centres under the auspices of UNESCO* (37 C/Resolution 93 and Document 37 C/18 Part I and its Annex), and if necessary, to provide guidance on how this can be achieved.

The evaluation review included a visit to IRTCUD in Belgrade, Serbia, by Dr. Elpida Kolokytha, assoc. professor, and Mr. Giuseppe Arduino on behalf of the Division of Water Sciences, IHP Secretariat in Paris, France, between 3 to 5 December 2019. During this period, Dr. E. Kolokytha and Mr. G. Arduino met with IRTCUD staff members, interviewed IRTCUD experts, discussed with people from the Rectorate of the University of Belgrade and also officials from the Ministry of Foreign affairs, the Ministry of Education, Science and Technological Development and the members of the Serbian Commission for UNESCO.

They have also visited and inspected the facilities of the Centre, looked into the outputs generated by the various scientists affiliated to the IRTCUD and had extended interviews with the Director of the Center.

#### **Conclusion of the evaluation**

**The recommendation of Dr. Elpida Kolokytha is that UNESCO's Agreement with IRTCUD to be renewed for a further duration of six years.**

## **1. Introduction**

Environmental and ecological consequences of drainage systems' failure, mainly downstream erosion, water quality deterioration of watersheds, are putting into peril the availability of fresh water resources. Future urbanization and climate change will further affect water runoff and urban flooding, one of the most significant hazards of uncertain nature of nowadays. To enhance flooding resilience and adapt to climate impacts through upgrading urban drainage, design and simulation of urban drainage systems is a quest of the twenty first century.

The agreement to establish such a Centre resulted from the growing need and challenges deriving from the sustainable and integrated management of urban drainage. IRTCUD with its long experience on integrated urban drainage, modelling, databases, and advanced methodologies is significantly contributing in achieving water security and sustainable urban living.

IRTCUD was initially established by the Resolution on the 24th UNESCO General Conference, Paris, October 1987 (C5/24 approved) as a Constitutive part of the Faculty of Civil Engineering, University of Belgrade until 2019 where IRTCUD has been changed in the form of a one member limited liability Company still operating in the Faculty of Civil Engineering, University of Belgrade. (Annex 1)

In order to enhance the operation and effectiveness of individual UNESCO water related centers, as well as the effectiveness of their networks, UNESCO - in conformity with its principles and guidelines for Category 2 centers and institutes and related strategy - requires that Category 2 water-related centers undergo periodic reviews.

The main objectives of these reviews are to assess the centers' performance with respect to their terms of reference and contributions to UNESCO's mandate, to provide a recommendation as to whether the agreement between UNESCO and the host government should be renewed, and to ensure that the focus and coverage of the activities of the centers are in line with the strategic objectives of UNESCO. This review process is applied to all centers.

This document refers to the consolidated evaluation report of December 2019 of the International Research and Training Centre On Urban Drainage (IRTCUD), SERBIA.

## **2. Key areas and functions of IRTCUD (Annex 1)**

Located at the University of Belgrade, Department of Civil Engineering, IRTCUD combines research across multiple disciplines spanning hydrology, hydraulics, mathematical modeling, urban drainage, advanced methodologies, hydro-informatics integrated water management and climate adaptation.

The functions of the Centre, according to its signed agreement shall be to:

- a. To promote scientific research on urban drainage;
- b. To create a mechanism for the development and exchange of scientific and technical information (including modeling software) on the results of research among experts in various countries;
- c. To coordinate the cooperative research activities and to provide facilities for laboratory and field work for the experts from other countries;
- d. To organize international training courses, symposia or workshops on special subjects and international study tour and lecturing activities;
- e. To cooperate with other world-wide institutions involved in the collection and processing of fields and laboratory data in the maintenance of the Urban Drainage Models (UDM) data base;

## **3. Review of International Research and Training Centre On Urban Drainage (IRTCUD) CATEGORY 2 CENTRE UNDER THE AUSPICES OF UNESCO**

This review is based on the Terms of Reference (TOR) drafted on 26 September 2019 and attached to this document. The review and evaluation were undertaken with the following purpose:

- to assess the extent to which the agreement IRTCUD conforms with the Integrated Comprehensive Strategy for Category 2 institutes and centers under the auspices of UNESCO (37 C/Resolution 93 and Document 37 C/18 Part I and its Annex), and, if needed, to provide guidance on how this can be achieved; and
- to assess the Centre's performance with respect to its objectives and functions, as specified in the Agreement between UNESCO and the host government, and its contribution to UNESCO's strategic program objectives and respective sectoral and UNESCO-IHP strategies, priorities, and themes.

### **3.1 Detailed Schedule of Meetings for the evaluation**

- **Day 1. 3 December 2019**

<b>Time</b>	<b>Agenda</b>	<b>Meetings</b>
-------------	---------------	-----------------

12:30	Arrival of the reviewers	Mr. G. Arduino / transfer to the hotel
16.15		Dr. E. Kolokytha / transfer to the hotel
17.00	Meeting at Metropol Hotel	Prof. <b>A. Djukic</b> Prof. <b>J. Despotovic</b>

• **Day 2. 4 December 2019**

Time	Agenda	Meetings/ Interviews
8.45-9.00	<b>Faculty of Civil Engineering – IRTCUD</b> Dean	✓ Prof. <b>V. Kuzmanovic</b>
09:00-9:20	Introduction on renewal process	✓ Mr. G. Arduino
9.20-11.00	Presentation of IRTCUD activities, publications, research, projects	✓ Assoc. Prof. <b>A. Djukic</b> / Director Staff members of IRTCUD ✓ Mr. <b>Dusan PRODANOVIC</b> , Fluid mechanics and flow measurement expert ✓ Ms. <b>Jasna PLAVSIC</b> , Hydrology, ✓ Mr. <b>Milos STANIC</b> , Hydroinformatics, expert ✓ Mr. <b>Nenad JACIMOVIC</b> , Hydraulics, expert ✓ Ms. <b>Anja RANDELOVIC</b> , Urban runoff treatment, expert ✓ Ms. <b>Ljiljana JANKOVIC</b> , Urban drainage analyses and design expert,
11.30-12.00	<b>Tour of IRTCUD and FCE Premises (office, laboratories)</b>	Prof. J.Despotovic / Assoc. Prof. A/Djukic and members of IRTCUD

	<b>University of Belgrade – Rector’s Office- HQ</b>	✓ Prof. <b>Nenad Zrnic</b> , Vice-Rector of the University of Belgrade for international cooperation
13:00-14:30	<b>Ministry of Foreign Affairs with the Serbian National Commission for UNESCO and a representative of the Ministry of Education, Science and Technological Development together with members of IRTCUD</b>	✓ <b>Kovac</b> , Secretary-General of the Serbian National Commission for UNESCO ✓ Prof. <b>G. Milasinovic</b> , President of the Serbian Commission for UNESCO ✓ Prof. D. Prodanovic. IRTCUD ✓ Dr. <b>M. Sokovic</b> , Assistant Minister Education, Science and Technological Development ✓ Prof. J.Despotovic, IRTCUD ✓ Prof. A.Djukic, IRTCUD
15:00	<b>Faculty of Civil Engineering – IRTCUD</b>	Discussion

• **Day 3. 5 December 2019**

<b>Time</b>	<b>Agenda</b>	<b>Meetings/ Interviews</b>
09:00-11:00	<b>Faculty of Civil Engineering – IRTCUD (room164)</b>  Discussion	✓ Prof. J.Despotovic, IRTCUD ✓ Prof. A.Djukic, IRTCUD ✓ Mr. G. Arduino

#### **4. Results of the visit**

This section presents the results of the evaluation and is structured around the main key areas, functions and activities of IRTCUD.

##### **4.1 Data collection**

The primary method for data collection during the site visit was a set of interviews and small group meetings with a broad range of informants (relevant “stakeholders”).

This information is combined with those emanating from the document review provided through internet, and later aggregated along with other data, finally develop the report of the evaluation and a set of recommendations.

## 5. Findings

### 5.1 Alignment of IRTCUD activities with the agreement signed with UNESCO

Based on the information provided by the presentation from the Director of the IRTCUD, the Activity Reports provided to the reviewer prior to site visit, as well as the interviews conducted with IRTCUD staff members, the Rectorate and the affiliated government agencies during the site visit the activities pursued by IRTCUD are deemed to be in alignment with those set out in the agreement signed with UNESCO. Documentation have been provided by the staff of the Center covering the range of activities corresponding to the five (a-e) IRTCUD objectives. Also, IRTCUD activities are well documented in the Activities Reports (Annex 3) and other publications attached in the ANNEXES.

Following is a brief summary of some IRTCUD research/education highlights:

✓ IRTCUD members were the initiators and were either direct organizers or sponsors / book editors of all of the UDM (Urban Drainage Modeling) series of 9 international conferences which are held every three years under the auspices of the Joint Committee for Urban Drainage of IAHR (International Association for Hydraulic Research and IWA (international Water Association).

✓ Since its establishment IRTCUD activities have been 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 Centers 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) (IRTDCUD/CUW) (Annex 4).

IRTCUD contributed to the creation of a Network for urban water management in the South Eastern European countries, with central coordination performed by Belgrade IRTCUD/CUW unit (active until 2010) (Annex 4)

✓

✓ IRTCUD initiated and run advanced research, development of the innovative rainfall-runoff-quality modelling for urban drainage systems including GIS based (or GIS centered) urban drainage modelling procedure for dual drainage (urban flooding) modelling, runoff pollution modelling.

✓ IRTCUD was a project partner for EDUCATE project “Building the Future of Transnational Cooperation in Water Resources in South East Europe” in a framework of the EU INTERREG IIIB CADSES programme (2007-2016). The main activity of the

project was development and implementation of international two-year post-graduate course Water Resources and Environmental Management as a flexible distance learning programme based on both e-learning and traditional way of lecturing (46 students educated) (Annex 3).

- ✓ A series of books and various other publications, numerous papers in top international scientific journals and research in international conferences and workshops were produced by the staff members of IRTCUD (Annex 3).
- ✓ During the reporting period the core staff of the Centre has supervised 3 of PhDs students addressing a wide range of different scientific topics. Between 2016-2019 3 PhDs referred to urban drainage and urban water management in FCE, University of Belgrade (Annex 2).

All along these years, even during the war in the former Yugoslavia (1992-1995) IRTCUD never stopped working and producing notable results.

### **Recommendations**

- The Centre should continue its active role in identifying pathways between scientific knowledge and integrated urban drainage, analyzing and strengthening the design, simulation and implementation of software with project partners and wider stakeholders to improve the resilience of urban systems and provide protection from potential failures at all scales.
- Reactivate and enhance regional cooperation, namely the IRTCUD Network for urban water management in the South Eastern European countries, to improve overall quality of life and environmental situation in urban, peri-urban and rural areas in the region by fostering integrated urban water management. (Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Serbia, N. Macedonia, Greece, Romania, Slovenia and Turkey).
- Improvement is needed in communicating the remarkable results of the activities of the Center. Maybe a newsletter can be uploaded in the site of the Center as well as to other UNESCO Centers/Chairs.

### **5.2 Alignment of the Center`s activities with UNESCO strategies, objectives and priorities**

The main field of activities of IRTCUD is development and implementation of the advanced methodologies for integrated urban water management in urban, peri-urban

and rural areas and their interactions with other urban water sub-systems. The Centre and its cooperating partners have developed several innovative, internationally recognized methodologies for research, modelling and sustainability improvement of urban water systems, such as GIS based urban drainage modelling, flooding and water quality assessment.

IRTCUD through educational, research, training and networking activities is clearly contributing to the fourth medium term strategic objectives of UNESCO (SO4): “Strengthening science, technology and innovation systems and policies – nationally, regionally and globally“ and (SO5) “Promoting international scientific cooperation on critical challenges to sustainable development», as well most of the six themes and many focal areas of the IH-VIII Phase of the IHP (2014-2021) (see table below and Annex 2).

IHP-VIII THEMES	ACTIVITIES	IRTCUD
<b>THEME 1:Water related Disasters and Hydrological Change</b>		
FA 1.1 Risk management as adaptation to global changes	NET, TR, RES, EDU	X
FA 1.2 Understanding coupled human and natural processes	RES, EDU NET	X
FA 1.4 Addressing uncertainty and improving its communication	RES, EDU	X
FA 1.5 Improve scientific basis for hydrology and water sciences for preparation and response to extreme hydrological events	RES, EDU	X

<b>THEME 3: Addressing Water Scarcity and Quality</b>		
FA 3.1 Improving governance, planning, management, allocation, and efficient use of water resources	NET, EDU	X
FA 3.4 Addressing water quality and pollution issues within an IWRM framework - improving legal, policy, institutional, and human capacity	RES, EDU NET, TR	X
<b>THEME 4: Water and human settlements of the future</b>		
FA 4.1 Game changing approaches and technologies	RES, EDU, TR	X
FA 4.2 System wide changes for integrated management approaches	RES, EDU, TR	X
FA 4.4 Opportunities in emerging cities in developing countries	RES, EDU, TR	X
<b>THEME 5: Ecohydrology, engineering harmony for a sustainable world</b>		
FA 5.1 Hydrological dimension of a catchment – identification of potential threats and opportunities for a sustainable development	NET, TR, RES, EDU	X
FA 5.4 Urban Ecohydrology – storm water purification and	NET, TR, RES, EDU	X

retention in the city landscape, potential for improvement of health and quality of life		
<b>THEME 6: Water Education, key for Water Security</b>		
FA 6.1 Enhancing tertiary water education and professional capabilities in the water sector	NET, EDU, TR	X
FA 6.2 Addressing vocational education and training of water technicians	NET, EDU, TR	X
FA 6.4 Promoting awareness of water issues through informal water education	EDU	X

NET: networking, EDU: education, RES: research, TR: training

IRTDUC's activities actively support the UNESCO strategic objectives and add to the expected result number 10 "Responses to local, regional and global water security challenges strengthened" and 11 "Knowledge, innovation, policies and human and institutional capacities for water security strengthened through improved international cooperation" under Main Line of Action 6 "Strengthening freshwater security" (37 C/5 2014-2015 and 38 C/5 2016-2017). It also supports to the expected result 7 "Member States have strengthened their response to water security challenges towards the achievement of water-related SDGs and targets, and other targets from relevant international water agendas" and 8 "Member States have improved policies and increased institutional and human capacities for water security through scientific cooperation" under Main Line of Action 3 "Improving knowledge and strengthening capacities at all levels to achieve water security" (39 C/5 2018-2019).

### **Recommendation**

- The Centre should continue to play an active role in the area of integrated urban

drainage and further enhance its scientific and operational assistance in other regions and widen the scope of the network with other governmental agencies internationally.

- The Centre should enhance its engagement with Member States and Associate Members of UNESCO.
- The Center should seek to networking with other UNESCO Centers to provide knowledge and training to the Balkans (area of Center) and extend also the activity to other areas.

### **5.3 Quality of coordination and interaction with UNESCO Headquarters, and other UNESCO Centers**

IRTCUD has communication regularly with UNESCO IHP Secretariat as well as the UNESCO Field Offices maintaining close relations and frequent interaction on joint projects, initiatives and cooperation. Prof. Jovan Despotovic, former Director of IRTCUD, represented region II as a vice-chair at the IHP IC from 2010 to 2014. Moreover, Prof. J. Despotovic, as Chair of the Serbia National committee for UNESCO IHP, had constant cooperation and active involvement with UNESCO HQ in various activities which has been widely recognized. IRTCUD is present at key IHP events (IHP Intergovernmental Council, strategic planning meetings, regional UNESCO National Commission consultations) (Annex 2).

It is worth mentioning the initiative organized by the IHP National Committee of Hungary with the participation of members of IRTCUD concerning the effort to enhance the flood safety of Danube Basin through “Inter Flood Course” project in 2018-19. The project developed a curriculum and training material for an international postgraduate course on flood risk management (Annex 5).

### **Recommendations**

- To the extent possible, IRTCUD, UNESCO and the global network of Category 2 Centres may wish to reinforce engagement among researchers affiliated with Category 2 Centres working in associated fields.

### **5.4 Quality of partnership with the Serbian Government / public private partners**

All the governmental agencies and Ministries interviewed acknowledged the contribution of the IRTDUC, confirmed their support to the Center and expressed their willingness to contribute to the success of IRTDUC’s mission. Also the Ministries

expressed their commitment to investigate further potential financial support (provision of some funds for selected activities) to the Center.

They also exalted the impact of IRTCUD activities on Danube River internationally, as it is well known that the Danube cooperation is a prototype worldwide, but also nationally as proved by the results from the activities of the member of the Center actively involved in Danube basin.

The Center has also organized and participated in a number of seminars and public/private partnership projects (Annex 5) which had positive effect on the society.

### **Selected Organization of Conferences and Seminars**

- Co-organisation of UN Water Day seminar (with IHP Unesco Serbia), 22 March every year from 2005 to 2019.
- Co-organisation of „International Seminar on Water Equity in Different Regions of the World Under the Climate Change“, Belgrade, 2019
- Co-organisation of «Young Water Professionals Conference», Belgrade, 2019,

### **Selected Applied projects**

- Prodanović D. (rukovodilac projekta): Sistemi za odvođenje kišnih voda kao deo urbane i saobraćajne infrastrukture. Naučni projekat broj TR-37010, za period 2011-2019.
- “Regenerating ecosystems with nature based solutions for hydro-meteorological risk reduction” (RECONNECT), Horizon 2020 Environment & Resources action no. 776866, EU Executive Agency for Small and Medium-sized Enterprises, 2018-2023.
- “International postgraduate course on flood management (InterFloodCourse)”, Danube Strategic Project Fund (DSPF) of the EU Strategy for the Danube Region, 04\_ECVII\_PA05, 2018-2019.

### **Recommendation**

- The results of applied projects and seminars should be better communicating so that civil society is aware of the added value of the Center both in their country and

internationally.

- Also the Center is recommended to participate more actively in public awareness campaigns.

### **5.5 Organizational arrangements, including management, governance and reporting**

The review period refers to 2014 and onwards. The time of the initial agreement though (1989) concerns a period where significant changes have been made in the country (the agreement was initially signed with former Yugoslavia which no longer exists) in terms of political and economic conditions. It is reasonable to understand that the political conditions (war 1992-1995 and economic sanctions 1992-1995, 1998-2000), have influenced the compliance with international organization regulations and therefore have not offered the so called enabling environment for the Center to fully comply with UNESCO norms, despite remarkable efforts from the people involved.

The current legal status of IRTCUD, as of 2019 though, is fully in compliance with UNESCO document 37 C/93, category 2 Centres and have the autonomy necessary for the execution of its activities. Also by its new form, as an independent entity, the Center will be competent to engage young researchers, PhD students to claim and receive external funding from European projects.

Regular reporting to UNESCO is secured as proved by the activity reports (Annex 2).

#### **Recommendation**

- An organizational chart would benefit to better depict the management and governance of the Center.

### **5.6 Human and financial resources**

IRTCUD directly involves 2 support staff, 25 staff members, and has relatively light, but complete, office facilities. IRTCUD's ability is clear to properly meet its objectives and to implement concrete research, education, capacity building, and policy support activities in the area of integrated urban drainage. IRTCUD rests largely on its belonging to the University of Belgrade, the largest university in Belgrade and in the region. As of 2019, IRTCUD is established as a limited liability company as per Serbian regulations. It is an independent legal entity, 100% owned by the Faculty

of Civil Engineering University of Belgrade (FCE). It is located at the FCE building in Belgrade. The current structure has a Manager, a Supervisory board of 5 members, one is reserved for UNESCO representative, while 27 staff members are shared with the University of Belgrade - Faculty of Civil Engineering, and it is fully in compliance with the UNESCO rules.

As for the financial means, there is a well-defined indication of both the Rectorate and the Serbian government to financially support the Center. At present the University secures the financial sustainability of the Center but also the Center has the potential to receive also more financial sources from research activities funded by external and internal donors.

### **Recommendation**

- The Centre should negotiate with the Serbian Government and the University Rectorate a kind of financial support over the period of its existence in order to have a long-term planning security and perspective.

### **5.7 The capacity and strategies of the Centre to share and disseminate knowledge**

The Center has a site where activities and all the other material related to the Center is presented. It is linked to the University of Belgrade but it is not adequately linked with the University news.

### **Recommendations**

- The Centre should revise its dissemination and communication strategy in order to increase not only visibility but also to showcase its impressive results.
- It is necessary to improve and update its site and may wish to produce flyers to circulate nationally and internationally.

### **5.8 Future plans of the Center**

In the future, additional efforts will be put to enhance cooperation with Novosibirsk State Faculty SIBSTRIN incl. preparation of a joint research project concerning rainfall runoff and solutions for pluvial floods. The first meeting is scheduled for May 2020 in Novosibirsk.

Networking of other UNESCO Chairs and Centers aiming at improving general management of urban water in cities at the Balkans, Black Sea and Caucasus countries. Seeking for cooperation and support by the Venice Regional Office and IHP Secretariat Paris.

Furthermore, also the meetings with the Baku and Almaty universities and conferences attendance will continue and try to incorporate also other UNESCO partners.

Additional efforts will be put into regional cooperation with neighbors and not only those, but also Hungary, Croatia, Bulgaria and Romania, accounting for Danube river basin cooperation accounting for pluvial floods.

A cooperation with the UNESCO **Center for Integrated and Multidisciplinary Water Resources Management (CIWRM)** of AUTH, Greece is expected on training of urban agencies in Balkan countries.

## **5. Conclusions**

There is clear political/scientific commitment and support from the Rectorate, Faculty and both the UNESCO National Commission and the Ministry of Education, Science and Technological Development to support and help IRTCUD continue its long history working in integrated urban drainage nationally and globally.

- In the area of education and capacity-development, IRTCUD has proven its effectiveness through the delivery of long-standing results. All these years IRTCUD has provided remarkable results, in terms of in terms of publications in books (2), papers in top scientific journals (25), UNESCO IHP series (4), training courses (4), technical reports, applied research projects, international conferences (52) and key note lectures (13) in advanced methodologies and integrated urban drainage educating and training people) all over the world under extremely difficult endeavors (the war from 1992 to 1995, and economic sanctions '92-95 and 1998-2000). The Centre is well positioned internationally through various research activities in different parts of the world.
- IRTCUD members have significant involvement in the Danube initiative, a prototype in international cooperation, had also developed collaborations in Central Asian Countries (Azerbaijan, Kazakhstan, and Uzbekistan) and in Russia giving the

opportunity to students (exchanges) to participating in summer schools (Novosibirsk and Belgrade), and also expanded their research interest (international conferences) on integrated urban water management in Baku, Almaty and Novosibirsk.

- The evaluator was most impressed with the persistence and patience as well as the vision of IRTCUD management team in carrying out the centre's mission and the level of productivity of all the staff members despite the extremely difficult economic and political conditions of the country throughout all these years. The leadership provided so far until 2019 by the acting director Professor J. Despotovic and currently by Professor A. Djukic, undoubtedly has contributed to the continuous development of remarkable outcomes and the success on IRTDUC in carrying its mission.

Therefore conclusion of the evaluation:

**The recommendation of Dr. Elpida Kolokytha is that UNESCO's Agreement with IRTCUD to be renewed for a further duration of six years.**

**Terms of Reference**

**for the Evaluation of the**

**International Research and Training Centre on Urban Drainage**

**(IRTCUD) in Belgrade, Serbia,**

**as a Category 2 Centre under the auspices of UNESCO**

1. BACKGROUND INFORMATION

**1.1. Historical background**

In the recent past, UNESCO has established a number of Category 2 centres (C2C) in the field of water management. These centres serve in their fields of specialization as international or regional centres and pools of expertise to provide services and technical assistance to Member States, cooperation partners and also internally to the network of UNESCO field offices. In this context, the water-related Category 2 centres (WC2C) are expected to contribute directly to attaining the strategic objectives and programmatic priorities of UNESCO's International Hydrological Program (IHP).

The International Research and Training Centre on Urban Drainage (IRTCUD) in Belgrade, Serbia, is one of the 36 water-related Category 2 centres under the auspices of UNESCO.

The International Research and Training Centre on Urban Drainage (IRTCUD) was established in 1989, following the decision of the General Conference of UNESCO at the 24<sup>th</sup> session in 1988 to establish an International Research and Training Centre on Urban Drainage in (former) Yugoslavia under the auspices of UNESCO (24 C/5 Approved). The existing Agreement was signed in 1989. The Agreement's initial duration was until the end of 1989 with a clause allowing it to be "renewed for the further periods as agreed upon the Government and UNESCO", as stated in the agreement. After a request for alignment of the Agreement by UNESCO's Deputy Director-General in May 2019, the Government of Serbia, through the Ministry of Education, Science and Technological Development expressed its willingness to submit IRTCUD to evaluation, in order to renew the Agreement for the continuation of its activities.

For more information on the Centre, please consult the IRTCUD's webpage:

<http://hikom.grf.bg.ac.rs/stari-sajt/irtcud/>

## **1.2. Status of the Centre**

IRTCUD is independent of UNESCO. The Centre enjoys, in accordance with the laws and regulations of Serbia, the functional autonomy necessary for the execution of its activities, and the legal capacity to contract, institute legal proceedings, and acquire and dispose of movable and immovable property.

## **1.3. Purpose of the Centre**

IRTCUD's key areas of work are Urban water management, mathematical modelling and hydroinformatics. Amongst its key successes, the Centre notably cooperated with

the Kazakh National Technical University, the Azerbaijan University of Architecture and Construction and the Novosibirsk State University through the exchange of students and teachers in research projects.

The functions of the Centre shall be to:

- ✓ To promote scientific research on urban drainage;
- ✓ To create a mechanism for the development and exchange of scientific and technical information (including modelling software) on the results of research among experts in various countries;
- ✓ To coordinate the cooperative research activities and to provide facilities for laboratory and field work for the experts from other countries;
- ✓ To organize international training courses, symposia or workshops on special subjects and international study tour and lecturing activities;
- ✓ To cooperation with other world-wide institutions involved in the collection and processing of fields and laboratory data in the maintenance of the Urban Drainage Models (UDM) data base;

#### **1.4. Rationale for the review and underlying principles**

Document 37 C/18 Part I and its annex, as adopted by 37 C/Resolution 93 (November 2013), contains the Integrated Comprehensive Strategy for Category 2 Centres, as currently applied to all proposals for the establishment of category 2 institutes and centres, and all renewals of existing agreements. The principles of the evaluation are set out in the same document.

#### **1.5. Budget**

The C2C under review or the sponsoring Member State shall be invited to cover all costs related to the review, including the mission costs of the expert, and the visit of staff of the UNESCO Division of Water Sciences.

## 2. PURPOSE AND USE OF THE REVIEW

The main purpose of the review is to inform the decision-making process on the renewal of the Category 2 status of the Centre. The findings of the review will be included in the Director-General's report to the Executive Board with her recommendations as to whether the designation as C2C under the auspices of UNESCO should be maintained, terminated or not renewed.

In addition, the review is also intended to inform the Member States of UNESCO, the UNESCO Secretariat and other stakeholders on the Centre's overall performance, its contribution to the Strategic Programme Objectives of UNESCO and on the implementation of the Integrated Comprehensive Strategy for Category 2 Institutes and Centres (37 C/Resolution 93 and document 37 C/18 Part I and its annex), and on potential improvements that may be suggested for the future.

The results of the review will be shared with the Natural Sciences Sector, the Government of Serbia and IRTCUD. The final report of the review will also be made available on the Natural Sciences sector's website.

## 3. REVIEW SCOPE

The evaluation, which must include a mission of 2 to 3 days consisting of a field visit to the Centre, will adopt both a retrospective and prospective approach. It should result in evidence-based and action-oriented recommendations and will be guided by the following overarching questions, to be further refined by the evaluators during the inception phase of this evaluation. In order to meet the objectives of the review, as described above, the following parameters shall be considered by the expert responsible for conducting the review:

- (a) The alignment of the activities effectively pursued by the Centre with those set out in the Agreement signed with UNESCO;
- (b) The relevance of the Centre's programmes and activities to achieve prevailing UNESCO's strategic programme objectives and sectoral or intersectoral programme priorities and themes. In particular:

- The Centre’s contributions to UNESCO strategic objectives and to expected results 10 “Responses to local, regional and global water security challenges strengthened” and 11 “Knowledge, innovation, policies and human and institutional capacities for water security strengthened through improved international cooperation” under Main Line of Action 6 “Strengthening freshwater security” (37 C/5 2014-2015 and 38 C/5 2016-2017), as well as to UNESCO’s global priorities Gender Equality and Africa;
  - The Centre’s contributions to UNESCO strategic objectives and to expected results 7 “Member States have strengthened their response to water security challenges towards the achievement of water-related SDGs and targets, and other targets from relevant international water agendas” and 8 “Member States have improved policies and increased institutional and human capacities for water security through scientific cooperation” under Main Line of Action 3 “Improving knowledge and strengthening capacities at all levels to achieve water security” (39 C/5 2018-2019), as well as to UNESCO’s global priorities Gender Equality and Africa;
  - The Centre’s ongoing and planned contributions to the implementation of relevant thematic and focal areas of the eighth phase of IHP (IHP-VIII for 2014-2021) internationally.
- (c) The effectiveness of the Centre’s programmes and activities to achieving its stated objectives;
- (d) The quality of the coordination and interaction with UNESCO, both at Headquarters and in the field (including UNESCO field offices and UNESCO National Commissions), and other thematically-related Category 1 and 2 institutes / centres with regard to planning and implementation of programmes;
- (e) The quality of partnerships with government agencies, public / private partners and donors;
- (f) The nature and quality of organizational arrangements, including management, governance and accountability mechanisms;
- (g) The human and financial resource base and the quality of mechanisms and capacities, as well as context-specific opportunities and risks for ensuring sustainable institutional capacity and viability;
- (h) The process of mobilizing additional resources and to what extent such additional funding is aligned to the strategic programme objectives of UNESCO;
- (i) The longer-term effects / the impact resulting from the Centres’ activities in Serbia and internationally.

(j) With a view towards the future, and considering the external environment within which the Institute operates, the strengths, weaknesses, opportunities and threats (SWOT) facing IRTCUD.

(k) The capacity and strategies of the Centre to communicate, share and disseminate knowledge.

#### **4. REVIEW TEAM**

One international reviewer will be selected to conduct the evaluation who will be accompanied by delegate(s) from the UNESCO IHP Secretariat. The qualifications of the independent reviewer should be:

Required:

- At least 10 years of professional experience in research and / or capacity-building in the field of water management;
- Academic degree (PhD preferred) in the above-mentioned field (water management);
- At least five years' experience in policy and programme evaluation with strong knowledge and skills in applying various evaluation methodologies and methods of data collection;
- Excellent communication and report-writing skills in English;
- Knowledge of the role and mandate of UNESCO and its programmes;
- No involvement in current or past activities of the Centre under the Centre's present agreement.

Desirable:

- Understanding and application of the UN Mandates in Human Rights and Gender Equality.

Verification of these qualifications will be based on the provided curriculum vitae. Moreover, references, web links or electronic copies of one recently completed evaluation report conducted by the consultant should be provided as part of the technical proposals, preferably relevant to the thematic areas of the review.

The evaluation should follow [UNEG \(United Nations Evaluation group\)](#) norms and standards for evaluations, as well as be based UNEG ethical guidelines.

## **5. REVIEW METHODOLOGY**

The review methods to be employed are to be clarified in the review framework to be proposed by the external evaluator, showing how each of the review dimensions mentioned in the review scope section will be addressed with regards to data sources and data collection methods. Among others, the following methods should be considered:

- Document review (desk study)
- Interviews with stakeholders (face to face, phone/skype)
- Direct observations through field visit(s), and
- Questionnaires/surveys with stakeholders, such as UNESCO staff and / or Partners.

The Division of Water Sciences and the International Hydrological Programme Secretariat (SC/HYD) and IRTCUD will provide the expert with relevant documentation to be reviewed in the desk study. Interviews are to be conducted with relevant UNESCO staff (SC/HYD), IRTCUD staff and other key stakeholders (e.g., academics and professionals who have been involved in activities conducted by IRTCUD).

IRTCUD will make all relevant documents and information available to the evaluators, including:

- A copy of the existing agreement between the Member State and UNESCO establishing the centre;
- (Annual) progress and activity reports;
- Financial reports;
- List of staff;
- List of key publications;
- List of donors and project partners;
- Minutes of the Governing Board meetings;
- Available audit and evaluation reports;

- List of beneficiaries, people trained and countries assisted.

A number of between 10 and 15 working days are estimated to be required for the realisation of this evaluation project.

## 6. PLANNING AND IMPLEMENTATION ARRANGEMENTS

### 6.1 Management arrangements

SC/HYD will assist in the preparation and organisation of the review exercise. The evaluator will be responsible for being self sufficient as regards logistics (office space, administrative and secretarial support, telecommunications, printing of documentation, etc.). However, suitable working space, when necessary, will be provided during the visit to Belgrade. While the evaluator is/are primarily responsible for the dissemination of all methodological tools (surveys, questionnaires), SC/HYD will facilitate this process to the extent possible (providing contact information, email addresses, etc.). Relevant stakeholders are being requested to provide planning documents, mission reports or other documents relevant to the evaluation.

### 6.2 Time schedule and deliverables:

The review will result in three deliverables, as follows:

1. The evaluator should submit an *inception report* consisting of:
  - i. Background, objectives and refined key review questions;
  - ii. Methodology (customized framework of how the exercise intends to cover the entire scope of the evaluation; and
  - iii. Work plan.

2. *Draft review report*: The process for preparing the draft review report shall allow adequate time for a discussion of the findings and the recommendations that have been proposed with SC/HYD and pertinent stakeholders, including the Government of Serbia and IRTCUD.
  
3. *Final review report*: The final report (maximum 30 pages excluding annexes) should be structured as follows:
  - Executive summary (maximum four pages);
  - Purpose of the review;
  - Scope of the review;
  - Methodology;
  - Findings;
  - Recommendations (including a formal recommendation on (dis)continuation of the Category 2 status);
  - Annexes (including interview list, key documents consulted, Terms of Reference).

The language of all reports will have to be English.

The final review report will be shared with the Centre and made available on the UNESCO's Natural Science Sector website.

Table 1: Tentative Schedule for the review

WHEN	WHAT	WHO
5 October 2019	Draft TOR	SC/HYD, SC/EO/IOS
15 <sup>st</sup> October 2019	Finalization of TOR	ALL
	Searching for candidates	SC/HYD, IRTCUD
31 <sup>st</sup> October 2019	Selection of external evaluator	SC/HYD, IRTCUD

	Establishing a contract with evaluator	IRTCUD
30 <sup>th</sup> November 2019	Briefing of external evaluator	IRTCUD SC/HYD
	Completion of review framework (design)	Evaluator
Before 31 <sup>st</sup> December 2019	Field visit(s), workshop for presentation of emerging findings and validation of preliminary recommendations <u>including the draft Agreement negotiations</u>	Evaluator, and eventually SC/HYD
	Submission of draft report to UNESCO	Evaluator
31 <sup>st</sup> January 2019	Review and comment on draft	SC/HYD, IRTCUD
	Finalization of the review report	Evaluators, SC/HYD
	Submit final documents to GBS	SC/HYD, SC/EO
April 2020	Presentation of final report plus documents to the Executive Board for renewal	Director-General

**Annex 1 – Current Legal status of IRTCUD / Past agreement**

**Annex 2 - List of major publications / PhDs (2014-2019)**

**Annex 3- Activities of IRTCUD**

**Annex 4- IRTCUD-CUW**

**Annex 5- Flyer of course**