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**“ Unesco global Ecohydrology Demosite meeting”, 1-4 july
2019 – Putrajaya – Malaysia.**

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**UNESCO GLOBAL ECOHYDROLOGY DEMOSITE MEETING
UNESCO INTERNATIONAL ECOHYDROLOGY FORUM
UNESCO ECOHYDROLOGY SCIENTIFIC ADVISORY
COMMITTEE MEETING**

1 - 4 JULY 2019 | PUTRAJAYA, MALAYSIA

PROGRAMME BOOK



UNESCO Jakarta
Regional Science Bureau for Asia and the Pacific



INTRODUCTION

The Institute for Environment and Development (LESTARI), Universiti Kebangsaan Malaysia (UKM) in Collaboration with UNESCO-IHP Paris and UNESCO Office Jakarta, supported by the Putrajaya Corporation (PPj) are organising the UNESCO Global Ecohydrology Demosite Meeting (1-2 July 2019), UNESCO International Ecohydrology Forum (3 July 2019) and UNESCO Ecohydrology Scientific Advisory Committee (SAC) Meeting (4 July 2019) in Putrajaya, Malaysia.



Ecohydrology, as a scientific paradigm, is based on the assumption that water – in the hydrological cycle, is the common denominator and regulator of most types of ecological processes, such as nutrient circulation and energy flow, which determine the degree of biodiversity, bioproductivity, availability of ecosystem services for society

and the resilience of ecosystems to climate change. Conversely biota also modify the hydrological cycle to a great extent – both types of interaction act as the background to the use of ecosystem processes as innovative management tools to enhance catchment's sustainability potential (expressed as water, Biodiversity) and to harmonize them with technical improvement measures.

Since 2010, UNESCO, in the framework of its International Hydrological Programme (IHP), has promoted the establishment of several demonstration sites (demosites) around the world to apply ecohydrology solutions in watersheds at all scales. The demosites show the integration of the concept of "improved ecosystem potential" with ecohydrology strategies closely related to water (i.e. ecohydrological engineering solutions by complementing standard engineering approaches) to improve integrated water resources management (IWRM) in specific areas. The demosites are long-term monitoring projects that involve different local actors to solve environmental, economic and social problems with the implementation of three EH principles (Hydrology, Ecology and Ecological Engineering). Also, they contribute to the Sustainable Development Goals, in particular SDG 2 (sustainable human development) and the one related to water (SDG 6, targets 6.5 and 6.6), as well as SDGs 13 (Climate Action), 14 (Life below water) and 15 (Life on land).

The network consists today of 23 sites in 18 countries around the globe. There is a need to strengthen and enlarge the network and use its potential to disseminate the ecohydrology concept worldwide in order to transferring knowledge to Member States, students, general public and decision makers.

(Further info at <http://ecohydrology-ihp.org/demosites/demosites/list>)



OBJECTIVES & OUTPUTS

The overall objectives of the UNESCO Global Ecohydrology Demosites Meeting are:

- To gather all UNESCO Ecohydrology demosites to present the respective progress in proposing solutions to solve problems, current initiatives and research as well as achievements.
- To share best practices on Ecohydrology in each demosite, including their relationship with nature based solutions (NBS), potential cost/benefit analyses and enhancement of ecosystem services
- To highlight contribution of demosites to the 2030 Agenda (SDGs)
- To evaluate and consider potential new demosites
- To strategize the best approach for “Future Ecohydrology”.

Expected outputs:

- Best practices from each demosite compiled and shared with reference to NBS, cost/benefit analyses and enhancement of ecosystem services;
- Knowledge improved and awareness raised on Ecohydrology;
- Set of recommendation for “Future Ecohydrology”, including communication, dissemination actions, etc.
- Agreed upon recommendation of EH SAC to present the global network of Ecohydrology demonstration sites to the next IHP Council with the aim of confirming the network under the auspices of UNESCO and thus recognize UNESCO Division of Water Sciences’ and more specifically the SC/HYD/EQE section’s efforts to reinforce this programmatic part of IHP-VIII and facilitate its expansion, as deemed appropriate by the Member State.

PROGRAMME

Day 1, Monday 1 July 2019		
UNESCO GLOBAL ECOHYDROLOGY DEMOSITE MEETING (By Invitation Only) Venue: The Everly Putrajaya Hotel		
8.30 am	Registration	
9.00 am	Welcome Remarks	Prof. Dato' Dr. Mazlin Bin Mokhtar <i>Director Institute for Environment and Development (LESTARI) Universiti Kebangsaan Malaysia (UKM)</i>
9.15 am	Opening Remarks	Mr. Hans Dencker Thulstrup <i>Senior Programme Specialist Water and Environmental Sciences UNESCO Regional Science Bureau for Asia and the Pacific, Jakarta</i> Mr. Giuseppe Arduino <i>Chief Ecohydrology, Water Quality and Water Education Section, Division of Water Sciences, UNESCO IHP, Paris</i>
9.30 am	Introduction of the Scientific Advisory Committee (SAC) & All Demosites Member	By Mr. Giuseppe Arduino , UNESCO IHP Paris
10.30 am	Tea Break & Photo Session	
11.00 am	Session 1	Ecohydrology Demosite in Asia Pacific (20' each) Moderator: <i>Mr. Hans Dencker, Thulstrup, UNESCO Office Jakarta</i> <ul style="list-style-type: none"> • Demosite 1: Putrajaya Lake & Wetlands, Malaysia By <i>Dr. Rahmah Elfithri</i>, Institute for Environment and Development (LESTARI), Universiti Kebangsaan Malaysia (UKM) • Demosite 2: Saguling Reservoir, Indonesia By <i>Dr. Ignasius Sutapa</i>, Asia-Pacific Centre for Ecohydrology (APCE), Cibinong, Indonesia • Demosite 3: Davao City, Philippines By <i>Dr. Ruth Gamboa</i>, University of the Philippines Mindanao (UP Mindanao), Philippines • Discussion

PROGRAMME

12.30 pm	Lunch	
2.00 pm	Session 2	<p>Ecohydrology Demosite in Europe (20' each)</p> <p>Moderator: <i>Prof. Marcelo Gaviño Novillo</i>, Departamento de Hidráulica, Universidad Nacional de La Plata and Universidad de Buenos Aires, Argentina</p> <ul style="list-style-type: none"> • Demosite 4: Guadiana Estuary, Portugal By <i>Prof. Dr. Luis Chicharo</i>, Professor and Coordinator of the Chair in Ecohydrology, University of Algarve (UAlg) and Director of International Centre for Coastal Ecohydrology (ICCE), Portugal • Demosite 5: Sulejow Reservoir-Pilica River, Poland By <i>Prof. Dr. Maciej Zalewski</i>, Professor and Director European Regional Centre for Ecohydrology (ERCE), Poland • Demosite 6: Lodz-Sokolowka River, Poland By <i>Prof. Dr. Maciej Zalewski</i>, Professor and Director European Regional Centre for Ecohydrology (ERCE), Poland • Demosite 7: Lodz-Ner River, Poland By Mr. Paweł Jarosiewicz, Secretary for the Polish National Committee for UNESCO/IHP, Lodz, Poland • Discussion
3.30 pm	Tea Break	
	Session 2 (Cont'd)	<p>Ecohydrology Demosite in Europe (20' each)</p> <p>Moderator: Prof. Dr. Maciej Zalewski, Professor and Director European Regional Centre for Ecohydrology (ERCE), Poland</p> <ul style="list-style-type: none"> • Demosite 8: Urban Periphery of Lyon, France By <i>Dr. Pascal Breil</i>, National Research Institute of Science and Technology for Environment and Agriculture (IRSTEA), Centre de Lyon-Villeurbanne, France

PROGRAMME

	Session 2 (Cont'd)	<ul style="list-style-type: none"> • Demosite 9: Trasimeno Lake-Tiber River Basin, Italy By <i>Stefano Fazi</i>, Istituto di Ricerca sulle Acque-Water Research Institute (IRSA), Consiglio Nazionale delle Ricerche (CNR) – National Research Council of Italy (CNR), Roma, Italy • Demosite 10: Kielstau Basin, Germany By <i>Dr. Georg Hörmann</i>, Dep. of Hydrology and Water Resources Research Institute of Natural Resources Conservation, Kiel University, Kiel, Germany • Discussion
4.30 pm	Discussion/Reflection	
5.00 pm	End of Day 1	
7.00 pm	Welcome Dinner @Putrajaya Seafood Restaurant	

Day 2, Tuesday 2 July 2019

UNESCO GLOBAL ECOHYDROLOGY DEMOSITE MEETING

(By Invitation Only)

Venue: The Everly Putrajaya Hotel

8.30 am	Registration	
9.00 am	Session 3	<p>Ecohydrology Demosite in Africa (20' each)</p> <p>Moderator: Dr. Jayakumar Ramasamy, Programme Specialist & Chief, Natural Sciences UNESCO Nairobi Office, Kenya</p> <ul style="list-style-type: none"> • Demosite 11: Assela-Burkitu Reservoir, Ethiopia By <i>Mr. Yohannes Zerihun Negussie</i>, Coordinator Ecohydrology Coordination Office, Ministry of Water, Irrigation and Electricity, Addis Ababa, Ethiopia • Demosite 12: Gumera Basin, Ethiopia By <i>Mr. Yohannes Zerihun Negussie</i>, Coordinator Ecohydrology Coordination Office, Ministry of Water, Irrigation and Electricity, Addis Ababa, Ethiopia

PROGRAMME

		<ul style="list-style-type: none"> • Demosite 13: Lake Naivasha, Kenya By <i>Dr. Nicola Pacini</i>, University of Calabria, Calabria, Italy • Discussion
10.30 am	Tea Break	
11.00 am	Session 4	<p>Ecohydrology Demosite in Latin America (20' each)</p> <p>Moderator: <i>Prof. Dr. Luis Chicharo</i>, Professor and Coordinator of the Chair in Ecohydrology, University of Algarve (UALg) and Director of International Centre for Coastal Ecohydrology (ICCE), Portugal</p> <ul style="list-style-type: none"> • Demosite 14: Lacar Lake-Trabunco Quitrahue Basin, Argentina By <i>Prof. Marcelo Gaviño Novillo</i>, Coordinator Focal Point for Latin America and the Caribbean, Departamento de Hidráulica, Universidad Nacional de La Plata and Universidad de Buenos Aires, Argentina • Demosite 15: Los Paltas-Catacocha, Ecuador By <i>Mr Marco Albarracín</i>, Technical Manager, INGERALEZA, Quito, Ecuador • Discussion
12.30 pm	Lunch	
2.00 pm	Session 5	<p>New Ecohydrology Demosite Proposal (20' each)</p> <p>Moderator: <i>Mr. Giuseppe Arduino</i>, UNESCO IHP Paris</p> <ul style="list-style-type: none"> • Proposed Demosite 1: Fengxi New City (the Sponge City), Shaanxi Province, China By <i>Prof. Dr. Jiake Li</i>, Institute of Water Resources and Hydroelectric Engineering, Xi'an University of Technology, Shaanxi Province, People's Republic of China

PROGRAMME

2.00 pm	Session 5	<ul style="list-style-type: none"> • Proposed Demosite 2: Khuvsgul Lake, Mongolia By <i>Prof. Dr. Luis Chicharo</i>, Professor and Coordinator of the Chair in Ecohydrology, University of Algarve (UAlg) and Director of International Centre for Coastal Ecohydrology (ICCE), Portugal • Proposed Demosite 3: Mindu Dam Morogoro, Tanzania By <i>Dr. Makarius Lalika</i>, Sokoine University of Agriculture (SUA), Solomon Mahlangu College of Science and Education, Department of Geography and Environmental Studies, Morogoro Tanzania • Proposed Demosite 4: Santa Cruz-Galapagos, Ecuador By <i>Mr Marco Albarracín</i>, Technical Manager, INGERALEZA, Quito, Ecuador • Proposed Demosite 5: Teusacá River Basin, Colombia By <i>Mr. Jose Alberto Gaona Currea</i>, Ecologist and International Land and Water Management MSc, Bogota, Republic of Colombia • Proposed Demosite 6: Timor Leste By <i>Mr. Hans Dencker Thulstrup</i>, UNESCO Office Jakarta • Discussion
4.00 pm	Tea Break	
4.30 pm	Presentation of the field trip about Putrajaya Constructed Wetland and Man-made Lake, a UNESCO Ecohydrology Demosite, Malaysia By <i>Mr. Ahmad Zubir Sopian</i> , Director, Environment, Lake and Wetland Division, Putrajaya Corporation (PPj)	
4.45 pm	Discussion, Planning & Way Forward	
5.00 pm	Conclusion & Closing Session	

PROGRAMME

Day 3, Wednesday 3 July 2019		
UNESCO INTERNATIONAL ECOHYDROLOGY FORUM		
Venue: Putrajaya Corporation		
8.30 am	Registration	
9.00 am	Welcome Remarks	Prof. Ir. Dr. Mohd Hamdi Abd Shukor <i>Vice Chancellor</i> <i>Universiti Kebangsaan Malaysia (UKM)</i>
		Datuk Dr. Aminuddin Hassim <i>President</i> <i>Putrajaya Corporation (PPj)</i>
		Mr. Hans Dencker Thulstrup <i>Senior Programme Specialist</i> <i>Water and Environmental Sciences</i> <i>UNESCO Regional Science Bureau for Asia and the Pacific, Jakarta</i>
		Mr. Giuseppe Arduino <i>Chief Ecohydrology, Water Quality and Water Education Section</i> <i>Division of Water Sciences, UNESCO IHP, Paris</i>
9.30 am	Opening Remarks	YB. Dr. Xavier Jayakumar <i>Minister of Water, Land and Natural Resources (KATS)</i> <i>Malaysia</i>
9.45 am	MoU Signing Ceremony between Universiti Kebangsaan Malaysia (UKM) and UNESCO Chair on Ecohydrology @University of Algarve (UALg), Portugal	
	Ecohydrology of Ecuador Book Launching	
10.00 am	Tea Break & Photo Session	
10.30 am	Special Ecohydrology Lecture “Ecohydrology for Sustainability” By Prof. Dr. Maciej Zalewski , <i>European Regional Centre for Ecohydrology (ERCE) Under the auspices of UNESCO, Lodz, Poland</i>	

PROGRAMME

11.00 am	Ecohydrology Video Showcasing
11.15 am	Forum Discussion with all participants Moderator : LESTARI/UNESCO <i>Panelist 1: Representative from Ecohydrology Demosite in Asia Pacific (ASPAC) Region.</i> <i>Panelist 2: Representative from Ecohydrology Demosite in European Region.</i> <i>Panelist 3: Representative from Ecohydrology Demosite in African Region.</i> <i>Panelist 4: Representative from Ecohydrology Demosite in Latin American (LAC) Region.</i>
12.15 pm	Conclusion and Closing by UNESCO & LESTARI
12.30 pm	Lunch




PROGRAMME


SITE VISIT TO PUTRAJAYA UNESCO ECOHYDROLOGY DEMOSITE

Venue: Putrajaya Lake & Wetlands

2.00 pm	Site Visit to Putrajaya Wetlands <ul style="list-style-type: none"> Visit to Wetland Park Putrajaya (Upper wetland & Central Wetland) Visit to Nature Interpretative Centre (NIC) Putrajaya
3.30 pm	Tea Break
4.00 pm	Site Visit to Putrajaya Lake <ul style="list-style-type: none"> Putrajaya Lake Cruise
5.30 pm	End of Demosite Meeting & Site Visit




INTEGRATED CATCHMENT MANAGEMENT OF PUTRAJAYA LAKE AND WETLAND (MALAYSIA)



Up dated in June 2011

Demosite description

Lithology / Geomorphology
 Calc. siliceous hemphils, granitic carbonaceous schist and quartz mica schist.
 Thinly bedded, more calcareous and more sandstone

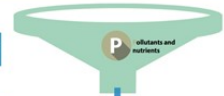


Main description:
 Putrajaya Lake and wetland catchment (Fig. 1) are located in Putrajaya Federal Territory within the Langkat River Basin area in Malaysia. The lake is at the southern part of the wetland.
 Putrajaya Lake (Fig. 2) is an urban lake in which its foreshores are the most popular resource for informal recreation as a waterfront city.
 Putrajaya Eco-hydrology Management won the Excellent Award in the Green City Award Category of the Malaysia Landscapes Architecture Awards (MLAA) 2012 and a Gold Award of the International Awards for Livable Communities 2012.

Conserve Ecological processes in natural ecosystems	Enhance Ecological processes in novel ecosystems	Apply complementary Ecological processes in high impacted systems
✗ NO	✓ YES	✓ YES

Major Issues

- Elevated level of pollutants from upstream inflow to the lake



Social-Ecological System

EN Objectives
 Water: ●●●●●
 Biodiversity: ●●●●○
 Services: ●●●●○
 Resilience: ●●●●○

EN Methodology
 The sociohydrological approach is implemented by the use of **constructed wetland** is a natural of treatment system to treat primary upstream inflow to the lake.

Objectives
 To increase stakeholder engagement and community participation in Putrajaya
 To create awareness among communities
 To educate people to be more responsible in taking care the environment

Stakeholders
 Putrajaya Corporation
 Putrajaya Lake and Wetland Management Centre (NCC) at Wetland Park Putrajaya
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ACTIVITIES
 Transforming Putrajaya from a Garden City to a Green City (Putrajaya Structure Plan - Sustainable Putrajaya 2025)
 Local Agenda 21 - Community Programmes for Sustainable Management
 Development of Nature Interpretive Centre (NIC) at Wetland Park Putrajaya
 Monitoring, Surveillance, and Maintenance Works of Lake and Wetlands
 Environment & Ecosystem Educational Programmes (EEP)
 Healthy Community Health Ecotourism (HCHE)
 Series of Putrajaya Lake and Wetland Management Workshop/Seminar/Forum/DIALOGUE/Collaborium
 Series of Putrajaya Lake and Wetland Management
 Series of Catch and Release Fishing Competition
 Series of Bird Watching and Identification Programme

Results
 MAIN EXPECTED OUTCOME: Improvement of the water quality of the surface runoff flowing into the lake from the upstream areas.
 LATEST RESULTS: The sociohydrological approach that combining the need of the ecosystem into the overall planning, approval, monitoring and enforcement jurisdiction of the city development and the human activities in this catchment area, significantly having a direct impact to the Putrajaya Lake. A number of monitoring and surveillance conducted in this area has shown very positive signs of increasing habitat development and ecosystem enhancements. Water quality is remained in good water quality for allowing water related activities conducted in the lake.

Ecology Principles and Solutions

EH IMPLEMENTATION PRINCIPLES
 Ecological engineering

EH SOLUTIONS
 Plantation of a variety of aquatic plants in this wetland (more than 70 species totaling 12 million number of plants)



Life Zones
 Life Zone: Tropical flood forest





Fig. 1. Aerial view of the series of wetland cells and different land use vegetation (Courtesy of Putrajaya Corporation)

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Developed by: A Initiative of



(Further info at <http://ecohydrology-ihp.org/demosites/view/124>)

PROGRAMME

Day 4, Thursday 4 July 2019		
UNESCO ECOHYDROLOGY SCIENTIFIC ADVISORY COMMITTEE MEETING (Scientific Advisory Committee Member Only) Venue: The Everly Putrajaya Hotel		
8.30 am	Registration	
9.00 am	Session 1	<p>Opening & Introduction</p> <p>Giuseppe Arduino <i>Chief Ecohydrology, Water Quality and Water Education Section, Division of Water Sciences UNESCO IHP, Paris</i></p> <p>Prof. Dr. Maciej Zalewski <i>Professor and Director European Regional Centre for Ecohydrology (ERCE), Polish Academy of Sciences, Poland (Chair EH SAC)</i></p> <p>Prof. Dr. Luis Chicharo <i>Professor and Coordinator of the Chair in Ecohydrology, University of Algarve (UALg) and Director of International Centre for Coastal Ecohydrology (ICCE), Portugal (Vice-chair EH SAC).</i></p>
10.30 am	Tea Break & Photo Session	
11.00 am	Session 2	EH SAC Meeting
12.30 am	Lunch	
2.00 pm	Session 3	EH SAC Meeting
3.30 pm	Tea Break	
4.00 pm	Discussion, Planning & Way Forward	
5.00 pm	Conclusion & Closing Session	

ORGANISING COMMITTEE

Advisor

Giuseppe Arduino, Chief Ecohydrology, Water Quality and Water Education Section, Division of Water Sciences International Hydrological Programme (IHP), UNESCO, Paris, France

Hans Dencker Thulstrup, Senior Programme Specialist, Water and Environmental Sciences, UNESCO Regional Science Bureau for Asia and the Pacific, Jakarta, Indonesia

Ecohydrology SAC Member

Coordinator

Dr. Rahmah Elfithri, Senior Lecturer/Research Fellow, Institute for Environment and Development (LESTARI), Universiti Kebangsaan Malaysia (UKM)

Secretariats

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