WATER FOOTPRINT ASSESSMENT FOR WATER AND FOOD SECURITY
(December 07-16, 2017)

Under the Aegis of
Government of India
Ministry of Human Resource Development

Foreign Expert:
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Chair of the water management group
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WATER FOOTPRINT ASSESSMENT FOR WATER AND FOOD SECURITY

Overview

Freshwater is an increasingly scarce resource requiring sustainable management. As competition for water from industrial, agricultural, domestic water consumptions, and environmental flows escalates, crafting effective policy responses become increasing complex. The increasing climate variability and the expected climate change add further complications. It is well established that water management clearly plays an important role in achieving future water and food security in a world where water stress has been increasing regularly.

Water Footprint is a new concept with potential to improve water management by providing a comprehensive way to measure water use and its impact. Water Footprint (WF) is a multidimensional indicator that measures direct and indirect water use in economic sectors, as well as water consumption of individuals, commodities, companies and nations. It includes information on the timing and location of the water consumption and pollution and on the type of water used. It demonstrates the impact of local water use on global water resources. It allows for comprehensive analysis of the impact of production and consumption on water resources, as opposed to measuring only direct water withdrawals in the traditional measures of water use. As such, information on the indirect use of water, often the water used in the supply chain of a product, focuses attention on the full impacts of the water use and helps identify areas for water saving. Water footprint can be calculated for products, individual, and nations.

Water footprint can be used to inform trade, agricultural, industrial and environmental policy. The concept of virtual water implies that water is a tradable good and its globalization has implications for trade policy. In water scarce countries, importing goods with high contents of virtual water rather than producing them domestically should reduce pressure on domestic water use. More generally, producing goods with high water content in areas with abundant water resources (and exporting these goods to areas of water scarcity) should result in more efficient global water use.

In view of the expected rise in regional water shortages, ensuing conflicts over water use are expected to intensify. Rising environmental consciousness among citizens around the globe is calling for better stewardship of our natural resources. To design policies to meet these challenges requires accurate measurement of water use and analysis of its impacts. The concept of Water Footprint Assessment (WFA) is drawing increasing attention, from policy makers to researchers, from government officials to corporate managers world over. In India, though the understanding and application of this concept is in a nascent stage, but the researchers, and the water professionals alongwith the policy makers in the Ministry of Water Resources, Govt of India have apparently shown good interest in this emerging area.

Objectives

The primary objectives of the course are as follows:

i) Exposing participants to the current status of Water and Food safety related issues,
ii) Introducing the concept of “Water Footprint” and various tools/techniques for the assessment of the discussed concept.
iii) Providing exposure to field problems related to water management and their solution employing WFA, through case studies and live national and international projects,
iv) Building in confidence and capability amongst the participants for further research and field application of the concept of “Water Footprint Assessment”.

v) Identifying the knowledge gaps in current academic programs and policy framework regarding WFA and providing recommendations for suitable modifications.

Experts in the field of Engineering Hydrology, Environmental Engineering and other affiliated fields will conduct the course which will be planned and offered as per the norms set by the GIAN programme. Course participants will be provided exposure to all the related topics through lectures and hands-on exercises. Case studies and group assignments will also be shared to stimulate research motivation of participants.

<table>
<thead>
<tr>
<th>Modules</th>
<th>A: Duration : December 07 – 16, 2017 (10 days)</th>
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<tbody>
<tr>
<td></td>
<td>B: Venue : Department of Hydrology, Indian Institute of Technology Roorkee</td>
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<td>Number of participants for the course module will be limited.</td>
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| You Should Attend If... | Participants from Industry, Research, Government and Non- Government Organisations, Faculty and Students from Institutions all over the world who are interested in the course are welcome to register. |

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<th>Fees</th>
<th>The participation fees for attending the course are as follows:</th>
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<tr>
<td></td>
<td>Participants from abroad: US $ 500</td>
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<tr>
<td></td>
<td>Industry: Rs. 15,000/-</td>
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<td></td>
<td>Officers of Govt. Organisations/NGOs: Rs. 10000</td>
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<td>Faculty or Scientists of Research / Academic Institutions: Rs. 10000</td>
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<tr>
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<td>Students of Academic Institutions: Rs. 5000</td>
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</tbody>
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The above participation fee includes soft copy of all instructional materials, laboratory and computer use for tutorials and internet facility. The participants will be provided with single/double occupancy accommodation on payment basis at the IITR/NIH. Hotel accommodation may also be arranged on payment basis at nearby places, if requested. The participation charges for STUDENTS include that of accommodation in student hostels.

For more details please visit www.iitr.ac.in

**Topics Covered:**

- Water and food security; issues and challenges,
- Water requirement and use in Industry,
- Water requirement for crops and irrigation,
- Integrated water resource management,
- Water quality assessment,
- Globalization of water roleplay,
- Estimating Green, Red and Blue water footprints in agriculture,
- Water footprint sustainability assessment,
- Water footprint reduction,
- Water footprints and virtual water trends of nation,

**Activities:**

- Classroom lectures, Tutorials, Lab demonstrations, Panel discussion, Field visit.
The Faculty

Arjen Hoekstra (1967) is Professor in Water Management at the University of Twente, the Netherlands. He holds an MSc degree, cum laude, in Civil Engineering and a PhD degree in Policy Analysis, both from Delft University of Technology. Hoekstra lived in Europe, Asia and Africa and has a broad international network. He has led a variety of interdisciplinary research projects and advised governments, civil society organizations, companies and multilateral institutions like UNESCO and the World Bank.

Hoekstra was the first to quantify the water volumes virtually embedded in trade, thus showing the relevance of a global perspective on water use and scarcity. As creator of the water footprint concept, Hoekstra introduced supply-chain thinking in water management. With the development of Water Footprint Assessment he laid the foundation of a new interdisciplinary research field, addressing the relations between water management, consumption and trade. Hoekstra is founder of the Water Footprint Network, was the organization’s first Science Director and now Chair of its Supervisory Board. Hoekstra’s scientific publications cover a wide range of topics related to water management and include a large number of highly cited articles and book chapters. His books were translated into several languages and include The Water Footprint of Modern Consumer Society (Routledge, 2013), The Water Footprint Assessment Manual (Earthscan, 2011), Globalization of Water (Wiley-Blackwell, 2008) and Perspectives on Water (International Books, 1998). He has been teaching in a variety of subjects, including: water resources management, river basin management, hydrology and water quality, water footprint assessment, sustainable development, natural resources valuation, environmental systems analysis, and policy analysis. He developed various educational tools, including the River Basin Game and the Globalization of Water Role Play.

Dr Himanshu Joshi is a Professor in the Department of Hydrology, Indian Institute of Technology, Roorkee, Uttarakhand State. His areas of interest are Environmental Monitoring, Modeling and Management; Environmental Impact Assessment, Sustainable Urban Water and Wastewater Management, Urban Infrastructure Planning and Water Footprint assessment.

He is an Environmental engineer by training, having earned his academic degrees from IIT Roorkee and IIT Kanpur. He has diverse experience of more than 30 years of working on teaching, research and consultancy assignments, which include a 4 year stint in Consulting Engineering Services (India) Pvt. Ltd., a reputed consulting firm. Besides supervising over 30 M.Tech. and 10 Ph.D. research dissertations, he has handled sponsored National and International research projects worth about Rs. 16.0 Million, more than 20 consultancy projects worth about Rs. 8.5 Million, and Capacity building projects worth about Rs. 15.0 Million till date. Some of the major agencies, which have sponsored the assignments include World Bank (Hydrology project Phase 1 and 3), UNESCO, IWA (International Water Association), ICLEI, Central Pollution Control Board (MOEF), Department of Science & Technology, University Grants Commission, Ministry of Water Supply and Sanitation and All India Council of Technical Education. He has also served as a member of many important National and International technical committees, and as Editor of Hydrology Journal (India). He is a recipient of Group Study Exchange award of Rotary International in 1985; US Fulbright Indo-American Environmental Leadership Award in 2006; Endeavour Executive award of Govt. of Australia in 2008; Royal Society-DST Indo-UK networking fellowship award in 2008 and British Council’s UKIERI Indo-UK Exchange award in 2012.

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REGISTRATION AND
ACCOMODATION REQUEST FORM
(To reach electronically by 30th November, 2017)

WATER FOOTPRINT ASSESSMENT FOR WATER AND FOOD SECURITY
December 07-16, 2017
Department of Hydrology, Indian Institute of Technology Roorkee
Roorkee, Uttarakhand

After Completion, please mail to:
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Phone: +91-1332286534, 285390 (O)
+91-1332285403 (R), +91-9412394288
E-mail: joshihfy@iitr.ac.in
Alternate mail id: himanshujoshi58@gmail.com

Affix passport size photograph

1. Name of applicant (in block letters): Ms./Mr. /Dr. ………………………………………………………………………

2. Status (Mark anyone): Student....., Not a student........

   (a) If a Student:
   • Academic program under which registered currently..........................................................
   • Date since when registered..............................................................................................
   • Name of Academic/ Research Institution........................................................................

   (b) If not a Student
   • Nature of employment (Teaching, Research, Govt. service, NGO, Industry)......................
   • Organisation where employed ........................................................................................
   • Employed since..............................................................................................................
   • Designation....................................................................................................................
   • Academic qualifications.................................................................................................

3. Full Postal Address for Communication:

4. E-mail id:

5. Phone numbers: Mobile.............................., Landline...........................

Date: .................................................................................................................. Signature of applicant

Note:
(i) Application should reach DOH Office at the above address latest by 30th November, 2017. Scanned copy may be sent by e-mail.

(ii) The seats are limited and will be filled generally on the first come first serve basis. Decision of the course coordinator will be final and binding to all in this regard.

(iii) Please start your travel to Roorkee to attend the course only if you have received a formal confirmation.