

Agricultural Water Management for Sustainable Rural Development



Annual Report 2015-16

ANNUAL REPORT 2015-16

Who we are

The International Commission on Irrigation and Drainage (ICID) is a technical and voluntary not-for profit non-governmental international organization (NGO), dedicated, inter alia, to enhance the world-wide supply of food and fibre for all people by improving water and land management, and the productivity of irrigated and drained lands.

About this report

This Annual Report for the financial year 2015-16 provides a glimpse of the activities undertaken by ICID as a network along with its partners.

Find out more about the activities of ICID at: www.icid.org

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Foreword

In many ways the year 2015 the year of global consensus and can be considered as the 'Year of Hope for Humanity'. At COP21 in Paris, the world leaders have finally reached to a historic Paris Agreement which is an ambitious, binding, and universal agreement to combat climate change and unleash actions and investment towards a low carbon, resilient and sustainable future. It is supported by the Sendai Framework agreed to in March 2015 that commits to Building the Resilience of Nations and Communities to Disasters and articulates the need for improved understanding of disaster risk in all its dimensions of exposure, vulnerability and hazard characteristics and the strengthening of disaster risk governance.



“Transforming our world: the 2030 Agenda for Sustainable Development” adopted by The UN General Assembly on 25 September 2015 is a plan of action for people, planet and prosperity. It has been recognized that eradicating poverty in all its forms and dimensions, is the greatest global challenge and an indispensable requirement for sustainable development.

Backed up by the consensus on the future that we want, the year 2016 has started to emerge as the year of global cooperation. We all know that the action phase is going to be tougher than the consensus development phase and would require sharing, cooperation and collaboration among nations and all sectoral development players within the nations. Enhanced involvement of stakeholders would play a key role in implementing new and innovative solutions for solving common challenges.

Multi-stakeholder partnerships and the resources, knowledge and ingenuity of the relevant stakeholders have been recognized as essential elements to mobilize and share knowledge, expertise, technology and financial resources that would complement the efforts of Governments and support the achievement of the Sustainable Development Goals (SDGs), particularly in developing countries.

Keeping pace with all round developments, ICID being the world’s largest network of irrigation and drainage professionals, responded to the call by adopting ICID Vision 2030 “Water secure world free of poverty and hunger through sustainable rural development”, defining the mission and setting organizational goals for itself, which aptly reflect ICID’s support in achieving the targets set by SDGs (See Page 11).

Water is an enabler in realizing the social, economic, and environmental dimensions of sustainable development. Progress towards SDG 6 to “Ensure availability and sustainable management of water and sanitation for all” and many targets across other SDGs are interdependent. For example balancing the food – water – energy – ecosystems nexus and creating dams and other storages to ensure resilience against water scarcity and drought have been kept in view while developing ICID Vision 2030.

ICID, directly or indirectly, contributes to SDGs, particularly Goal 2 on “End Hunger, achieve food security and improved nutrition and promote sustainable agriculture” and Goal 6 on “Ensure availability and sustainable management of water and sanitation for all”. ICID is in the process of identifying the needs of its NCs to achieve the targets set under these Goals with the help of its technical work bodies.

The process of developing an Action Plan to implement ICID Vision 2030 was initiated at the 66th Meeting of IEC, held in Montpellier, September 2015. The process of reviewing the functioning of the Working Groups, which started in 2014, continued during the year and new WGs were established and the scope of a number of WGs have been reviewed or are under review. Task Forces (TF) were

set up to revitalize the NCs and undertake Financial Sustainability Review, which will continue their work and present their reports at the 67th IEC Meeting in Chiang Mai, in November 2016.

The Annual 67th IEC Meeting in Chaing Mai will be preceded by the Second World Irrigation Forum (WIF2), which acts as a multi-stakeholder platform. International Steering Committee (ISC) under the Co-chairmanship of President Dr. Saeed Nairizi and Mr. Suthep Noipairoj, Chair, THAICID is overseeing the preparations of the Forum, duly assisted by an International Technical Advisory Committee (ITAC).

Based on its experience in recognizing the Heritage Irrigation Structure (HIS), ICID has initiated a new World Water System Heritage Program, as a members' initiative at the World Water Council (WWC) platform in close collaboration with UNESCO, FAO and several other professional organizations. The Central Office of ICID is serving as the Secretariat of the new program and my colleagues in the Central Office have taken this new responsibility with zeal. They continuously look forward to the feedback from all our patrons to enable them to serve the network better.

Realizing the fact that lack of capacity is constraining the development of irrigated agriculture, ICID undertake capacity development training and education initiative in right earnest and is organizing a training program for participants from Africa region to start with.

Over the years ICID has been making various endeavours to involve more Young Professionals (YP) in its activities. In the past various NCs have organized their YP groups within the countries and the WG-YPF has had limited participation. In order to broaden the reach of Working Group of Young Professionals (WG-YPF), it has been transformed into an ICID Young Professional's e-Forum (IYPeF), where more than a hundred professionals are participating. Some of our NCs such as CNCID and KCID have facilitated participation of some Young Professionals at ICID events with support from International Partners such as WMO, FAO, etc.

ICID, the network of NCs, agriculture water management professionals and all stakeholders striving towards rural development through irrigation, drainage and flood management tools, has performed its objectives with the active participation of many volunteers and dedicated of experts from various NCs and WGs. I acknowledge the dedication of all these volunteers.



Avinash. CTyagi
Secretary General



Abbreviations

AARDO	African-Asian Rural Development Organization	CEE-GWP	Central and Eastern Europe Global Water Partnership
ABID	Brazilian National Committee, ICID	CEGIS	Center for Environmental and Geographic Information Services
ADB	Asian Development Bank	CEO	Chief Executive Officer
AFEID	Association Française pour l'Etude des Irrigations et du Drainage (French National Committee on Irrigation and Drainage)	CERYD	Comité Español de Riegos y Drenajes (Spanish National Committee on Irrigation and Drainage)
AFGICID	Afghanistan National Committee of ICID	CH-AGRAM	Swiss National Commission on Agro-Systems and Land Improvement
AFRWG	African Regional Working Group	CHICID	Comité Nacional Chileno de Riego y Drenaje (Chilean National Committee on Irrigation and Drainage)
AGORA	Access to Global Online Research in Agriculture	CI	Controlled irrigation
AGRF	African Green Revolution Forum	CMECC	Chiang Mai International Exhibition and Convention Centre
AIF	Asian Irrigation Forum	CNCID	Chinese National Committee on Irrigation and Drainage
AIT	Asian Institute of Technology	CNRID	Romanian National Committee on Irrigation and Drainage
AMID	Association Malienne des Irrigations et du Drainage (Malian Committee of Irrigation and Drainage)	CO	Central Office
ANAFIDE	Association Nationale des Améliorations Foncières de l'Irrigation, du Drainage et de l'Environnement (Moroccan National Committee on Irrigation and Drainage)	CPCT	Center for Protected Cultivation Technology
ANID	Association Nigérienne pour l'Irrigation et le Drainage (Niger National Committee on Irrigation and Drainage)	C-PR&P	Committee on Public Relations and Publications
APFM	Associated Program on Flood Management	CPSP	Country Policy Support Program
ARCID4	4th African Regional Conference on Irrigation and Drainage	CRCID	Croatian Committee on Irrigation and Drainage
ARS	Agricultural Research Station	CSUFs	Climate Services User Forums
ARTF-CC	Asian Regional Task Force on Climate Change and Irrigation	CTCID	ICID-Chinese Taipei Committee
ASRWG	Asian Regional Working Group	CULS	Czech University of Life Sciences
ATID	L'Association Tchadienne pour l'Irrigation et le Drainage (Chad National Committee on Irrigation and Drainage)	CWC	Central Water Commission
AUNCID	Austrian National Committee on Irrigation and Drainage	CYCID	Cyprus National Committee on Irrigation and Drainage
AWC	Arab Water Council	CZNC-ICID	Czech Committee of the International Commission on Irrigation and Drainage
AWD	Alternate Wetting and Drying	DAFF	Department of Agriculture, Forestry and Fisheries
AWF3	3rd Arab Water Forum	DM	Direct Membership
BANCID	Bangladesh National Committee on Irrigation and Drainage	DPRK	Democratic People's Republic of Korea
BCM	Billion Cubic Meters	DSI	General Directorate of State Hydraulic Works (Turkey)
BES	Better Engineered Solutions	DWR	Department of Water Resources
BIS	Bureau of Indian Standards	EB-JOUR	ICID Journal Editorial Board
BoM	Bureau of Meteorology	EECCA	Eastern Europe, Caucasus and Central Asia
BUET	Bangladesh University of Engineering and Technology	ENCID	Egyptian National Committee on Irrigation and Drainage
BWDB	Bangladesh Water Development Board	EPADP	Egyptian Public Authority on Drainage Projects
BWP	Bangladesh Water Partnership	ERWG	European Regional Working Group
CBIP	Central Board of Irrigation and Power	ES	Ecosystem Services
C-CONGR	Committee on Congresses/Conferences	ESTICID	ICID National Committee of Estonia

ETCID	Ethiopian Committee on Irrigation and Drainage	INACID	Indonesian National Committee on Irrigation and Drainage
EWTDRRA	European Work Team on Drainage	INCH	Indian National Committee on Hydraulics
EWT-SIM	European Work Team on Sustainable Irrigation Management	INCID	Indian National Committee on Irrigation and Drainage
EWT-WRRA	European Work Team on Water Related Risk Analysis	INCSW	Indian National Committee on Surface Water
FAO	Food and Agricultural Organization	INCT-EL	National Institute of Science and Technology in Irrigation Engineering
FAO-RAP	FAO Regional Office for Asia and the Pacific	INCTSAL	National Institute of Science and Technology in Salinity
FCRA	Foreign Contribution Regulation Act	INDC	Intended National Determined Commitments
FIJICID	Fiji National Committee on Irrigation and Drainage	INWEPF	International Network for Water and Ecosystem in Paddy Fields
FINCID	Finnish National Committee on Irrigation and Drainage	IRCID	Irish National Committee for Irrigation and Drainage
GB	Governing Board	IRNCID	Iranian National Committee on Irrigation and Drainage
GCC	Global Climate Change	IRQCID	Iraqi National Committee on Irrigation and Drainage
GECID	German National Committee of ICID	ISO	International Organization for Standardization
GFCS	Global Framework for Climate Services	ITAC	International Technical Advisory Committee
GIS	Geographic Information Services	ITAL-ICID	Comitato Nazionale Italiano, ICID (Italian National Committee of ICID)
GWP	Global Water Partnership	IUCW	International Union for the Conservation of Water
HIS	Heritage Irrigation Structures	IWA	International Water Association
Hon.	Honoraire	IWF	India Water Foundation
HUCID	Hungarian National Committee of ICID	IWHR	Institute of Water Resources and Hydropower Research
IACID	Irrigation Australia's Committee on Irrigation & Drainage	IWM	Institute of Water Modelling
IAL	Irrigation Australia Ltd	IWMI	International Water Management Institute
IARI	Indian Agricultural Research Institute	IWRM	Integrated Water Resources Management
ICAR	Indian Council for Agricultural Research	IYPeF	ICID Young Professional's e-Forum
ICARDA	International Center for Agricultural Research in the Dry Areas	JISL	Jain Irrigation Systems Limited
ICE-WaRM	International Centre of Excellence in Water Resources Management	JNC-ICID	Japanese National Committee on Irrigation and Drainage
ICID	International Commission on Irrigation and Drainage	KAZCID	National Committee of Kazakhstan on Irrigation and Drainage
ICID.UK	British National Committee of ICID	KCID	Korean National Committee on Irrigation and Drainage
ICIMOD	Integrated Mountain Development	KRC	Key Resource Centre
ICOLD	International Commission on Large Dams	KRC	Korean Rural Community Corporation
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics	KYRCID	Kyrgyz National Committee on Irrigation and Drainage
IDMP	Integrated Drought Management Program	LCA	Life Cycle Approaches
IDMT	Irrigation/Drainage Management Transfers	LDCs	Least Developed Countries
IDW	International Drainage Workshop	LESTARI	Institute for Environment and Development
IEC	International Executive Council	LTCID	Lithuanian National Committee on Irrigation and Drainage
IEEC	International Education and Exchange Center	MAKCID	Comite Nationale d'Irrigation et de Drainage de Macédoine (Macedonian National Committee on Irrigation and Drainage)
IFAD	International Fund for Agricultural Development		
IFM	Integrated Flood Management		
IFPRI	International Food Policy Research Institute		
IGS	International Geosynthetics Society		
IHA	International Hydropower Association		
IHP	International Hydro-logical Program		
IMD	India Meteorological Department		
IMIC	International Micro Irrigation Conference		
IMS	Innovative Material System		

MANCID	Malaysian National Committee on Irrigation and Drainage	SANCID	South African National Committee on Irrigation and Drainage
MASSCOTE	Mapping System and Services for Canal Operation Techniques	SAPCC	State Action Plan on Climate Change
MB	Management Board	SARIA	Southern African Regional Irrigation Association
MCS	Monte Carlo simulation	SASCOF6	6th Session of South Asian Seasonal Climate Outlook Forum
MDGs	Millennium Development Goals	SC	Staff Committee
MDWS	Ministry of Drinking Water and Sanitation	SDGs	Sustainable Development Goals
MNCID	Myanmar National Committee on Irrigation and Drainage	SG	Secretary General
MoU	Memorandum of Understanding	SGH	Secretary General Honoraire
MoWR	Ministry of Water Resources	SINCID	Slovenian National Committee on Irrigation and Drainage
MSAE	Malaysian Society of Agricultural Engineers	SIWI	Stockholm International Water Institute
MT	Management Transfer	SLNICID	Sri Lanka National Committee, ICID
MXCID	Mexican National Committee on Irrigation and Drainage	SNCID	Sudanese National Committee, ICID
MyCWP	Malaysian Country Water Partnership	SOMIS	Service Oriented Management of Irrigation Systems
MyWP	Malaysian Water Partnership	SPIS	Solar Powered Irrigation Systems
NAPCC	National Action Plan on Climate Change	SS	Summer School
NARAID	Northern African Regional Association for Irrigation and Drainage	SSD	Sub-Surface Drainage
NASM	National Agricultural Science Museum	SWWW	Stockholm World Water Week
NC	National Committees/Committee	SYCID	Syrian National Committee on Irrigation and Drainage
NENCID	Nepal National Committee on Irrigation and Drainage	TANCID	Tanzania National Committee on Irrigation and Drainage
NETHCID	Netherlands National ICID Committee	TF	Task Force
NGO	Non-Governmental Organization	TF-VE	Task Force on Value Engineering
NINCID	Nigerian National Committee on Irrigation and Drainage	TF-WWF7	Task Force to Guide ICID Inputs to World Water Forum 7
NMSA	National Mission on Sustainable Agriculture	THAICID	Thai National Committee on Irrigation and Drainage
NMSs	National Meteorological Services	TR	Technical Report
NWMC	National Water Museum of China	TSU	Technical Support Unit
O&M	Operation and Management	TUCID	Turkish National Committee on Irrigation and Drainage
PANCID	Pakistan National Committee on Irrigation and Drainage	UACID	Ukraine National Committee on Irrigation and Drainage
PAWEES	International Society of Paddy and Water Environment Engineers	UKM	Universiti Kebangsaan Malaysia
PCSO	Permanent Committee on Strategy and Organization	UN	United Nations
PCTA	Permanent Committee for Technical Activities	UNDP	United Nations Development Programme
PEC	Pakistan Engineering Congress	UNECE	United Nations Economic Commission for Europe
PH	President Honoraire	UNESCO	United Nations Educational, Scientific and Cultural Organization
PIDM	Participatory Irrigation/Drainage Management	UNESCO-IHE	UNESCO-IHE Institute for Water Education
PIM	Participatory Irrigation Management	UNFCCC	United Nations Framework Convention on Climate Change
PNC-ICID	Philippine National Committee on Irrigation and Drainage	UNU-INWEH	United Nations University Institute on Water, Environment and Health
PWP	Pakistan Water Partnership	UPM	Universiti Putra Malaysia
RAC	Rahad Agricultural Corporation	URUCID	Uruguay National Committee on Irrigation and Drainage
RIMES	Regional Integrated Multi-Hazard Early Warning System	USCID	United States Committee on Irrigation and Drainage
RUCID	National Committee of the Russian Federation on Irrigation and Drainage		
SADC	Southern African Development Community		

UTAEM	International Agricultural Research and Training Centre	WG-M&R	Working Group on Modernization and Revitalization of Irrigation Schemes
UzNCID	Uzbekistan National Committee on Irrigation and Drainage	WG-ON-FARM	Working Group on "On-Farm Irrigation Systems
VP	Vice President	WG-SON-FARM	Working Group on Sustainable On-Farm Irrigation System Development
VPH	Vice President Honoraire	WG-PQW	Working Group on Use of Poor Quality Water for Irrigation
WALAMTARI	Water and Land Management Training and Research Institute	WG-SDG	Working Group on Sustainable Drainage
WAPCOS	Water and Power Consultancy Services	WG-SDTA	Working Group on Sustainable Development of Tidal Areas
WAPDA	Water and Power Development Authority	WG-WATER and CROP	Working Group on Water and Crops
WARPO	Water Resources Planning Organization	WG-WATS	Working Group on Water Saving in Irrigated Areas
WATSave	Water Saving	WIC	Water Technology Centre
WB	Workbody	WID Prize	World Irrigation and Drainage Prize
WBD	World Biodiversity Day	WIF	World Irrigation Forum
WDCD	World Day to Combat Desertification	WMO	World Meteorological Organization
WED	World Environment Day	WRC	Water Research Commission
WESP	World Economic Situation and Prospects	WSH	Water Systems Heritage
WG- BIO-ENERGY	Working Group on Water for Bio-Energy and Food	WUAs	Water User Associations
WG	Working Group	WUGs	Water User Groups
WG-CAFM	Working Group on Comprehensive Approaches to Flood Management	WUOs	Water User Organizations
WG-CDTE	Working Group on Capacity Development, Training and Education	WWAP	World Water Assessment Programme
WG-CLIMATE	Working Group on Climate Change and Agricultural Water Management	WWC	World Water Council
WG-CROP	Working Group on Water and Crops	WWD	World Water Day
WG-DROUGHT	Working Group on Water Management in Water Stressed Regions	WWF	World Wide Fund for Nature
WG-ENV	Working Group on Environment	WWF-7	7th World Water Forum
WG-HIST	Working Group on History of Irrigation, Drainage and Flood Control	YUGCID	Yugoslav Association on Irrigation and Drainage (Erstwhile)
WG-IDSST	Working Group on Irrigation and Drainage in the States under Socio-Economic Transformation	ZACID	Zambian National Committee on Irrigation and Drainage
WG-IOA	Working Group on Institutional and Organizational Aspects of Irrigation/ Drainage System Management	ZwCID	Zimbabwe National Committee on Irrigation and Drainage



About ICID

The International Commission on Irrigation and Drainage (ICID) is a leading scientific, technical, and professional international not-for-profit network of experts from the fields of irrigation, drainage, and flood management working together with the mission 'Sustainable agriculture water management'

ICID is a knowledge sharing platform dedicated to issues related to entire spectrum of agricultural water management practices ranging from rain-fed agriculture to supplemental irrigation, land drainage, deficit irrigation to full irrigation, etc. In addition, drainage of agricultural lands forms the core theme of our activities. Floods and drought; the two extremes of increasingly variable climate as a result of potential climate change, also form the focus of activities.

Vision

ICID believes that through prudent agriculture water management, agriculture production can be made more resilient resulting in reducing the incidence of hunger, ensuring food security, improving rural livelihoods and maintaining ecosystem services. Irrigation and drainage infrastructure, while ensuring availability of water for agriculture, also serve multiple roles such as ensuring the provision of safe drinking water and sanitation thereby improving the health and productivity of the rural population. At the same time irrigation infrastructures also serve as means of communication and help farmers' in easy access to markets for inputs and selling agriculture produce.

Mission

The vision of ICID will be achieved by generating new knowledge, compiling and collating information, sharing experiences and good practices and disseminating the new knowledge to the relevant stakeholders. Prudent AWM is not confined to the efficient use of water in agriculture, but is concerned with making optimal use of water diverted for agriculture for the overall benefit of the rural community and preserving the quality of return flows to receiving water bodies.

“Water secure world free of poverty and hunger through sustainable rural development”

“Work together towards sustainable agriculture water management through inter-disciplinary approaches to economically viable, socially acceptable and environmentally sound irrigation, drainage and flood management”



Organizational Goals

In order to fulfil the mission and realise the Vision 2030, ICID has adopted the following:

1 Enable higher crop productivity with less water and energy	To advocate with the national governments and funding agencies to make strategic choices that favour increased profitability and productivity in energy efficient manner through sustainable agricultural water management.
2 Be a catalyst for change in policies and practices	To provide guidance to water policy analysts on experiences with the modelling principals and latest tools for simulating development scenarios to generate knowledge which can serve as catalyst for policy changes.
3 Facilitate exchange of information, knowledge and technology	To work towards exchange of information, knowledge and new technologies, duly recognizing the local wisdom, in order to facilitate analysis of trade-offs to maintain the economic efficiency of agricultural production and minimising the adverse environmental impacts.
4 Enable cross disciplinary and inter-sectoral engagement	Network would make available the required information in respect of irrigation, drainage and flood management to all the relevant stakeholders in the language suitable for their appreciation. Where required, platform for inter-disciplinary networking would be facilitated for dialogues between various groups.
5 Encourage research and support development of tools to extend innovation into field practices	Network would encourage research and provide technical support on the latest innovations available in the agriculture water domain to the government and non-governmental entities to help in the outreach into rural communities.
6 Facilitate capacity development	Would work towards training and fostering young professionals, continuous training of professionals, promoting irrigation and drainage as relevant academic topics in education and training within the context of integrated land and water management and will foster closer connections with various stakeholders including farmers through national committees.

We attain our mission through generation, exchange and dissemination of knowledge

The Commission accomplishes its mission by exchange of information amongst its National Committees, stake holders, member institutions, private companies and individual members by holding periodical meetings, sponsoring of conferences, symposia, workshops, and exhibits, organizing studies, trainings, study tours and experiments; publication of journal, conference proceedings, reports, guidelines for best practices, books, documents; publishing newsletters, news updates, e-bulletins, periodicals, pamphlets, posters, teaching and extension aids and literature for informing the world community at large about the developments associated with irrigation, drainage and flood management; cooperating with other national, regional and international organizations, whose interests and activities are connected to the mission of ICID, and taking measures as may be considered necessary within its field of activities.

TARGET 17.6

Enhance North-South, South-South and triangular regional and international cooperation on and access to science, technology and innovation and enhance knowledge sharing on mutually agreed terms, including through improved coordination among existing mechanisms, in particular at the United Nations level, and through a global technology facilitation mechanism.



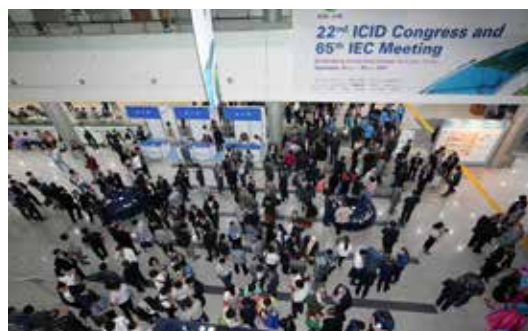
ICID provides a unique platform for the exchange of knowledge and information related to agricultural water management. ICID organizes triennially International Congress on Irrigation and Drainage to deliberate on certain specific Questions relating to irrigation and drainage; and World Irrigation Forum (WIF) for participation of multi-stakeholder for sharing and learning by engaging in issues of interest at global level. All these events provide an excellent platform to the participants for networking with peers and information exchange.

ICID works in close collaboration with many international and regional organizations having similar objectives such as, FAO, IFAD, IWMI, World Bank, ADB, UN-Water, WMO, UNDP, GWP, WWC, ICRISAT, ICARDA, AWC, WFO, etc. ICID in the past has been involved in the global discussions leading to Agenda 21, World Water Vision, Report on World Commission on Dams, and recently concluded Rio+20 events.

We address multi-disciplinary aspects of irrigation and drainage by synergizing all stakeholders

ICID is profoundly concerned with the sustainable development of irrigation and drainage while preserving the environment and is working towards social equity. As such the Commission is not merely a technical organization but also concerned with global development issues. It recognizes the close nexus between water, food, land, energy and eco-system.

The Commission, with active support from its member countries, and stake holders, provides an international forum and network (World Irrigation Forum) in which the technical, agronomic, socio-economic, environmental and managerial complexities involved in the development, management and operation of irrigation, drainage and flood management works are discussed.



Recognizing that irrigation and drainage is not just an engineering activity, ICID also covers related agronomic, social, financial, and environmental aspects. The questions addressed by various triennial Congresses clearly indicate a progressive shift from deliberating on purely technical questions to global water and food related issues and the sustainability of development.

For the purpose, ICID draws together the diverse disciplines and a pool of over 300 eminent professionals / experts involved in the field of irrigation, drainage and flood management from all over the world. These professionals through technical and strategic workbodies address topics of current importance in developing / emerging, least developed and developed countries.

ICID works towards creating a synergy between agricultural and water policies, and increased investment both from public and private sources for sustainable development of irrigation and drainage. As farmers are at the core of agricultural water use and are the principal stakeholders, ICID promotes Participatory Irrigation Management (PIM)/ Management Transfer (MT) to enhance the performance of irrigation schemes.

Organization Structure and Management

Our membership spreads around the world

ICID promotes its objective through its network of National Committees, like-minded international organizations, private companies, institutions, and professional individual members. The membership of the Commission primarily comprises of National Committees representing the member countries. The National Committees in turn have their own membership of individuals, institutions and private companies from their countries. Direct Membership for institutions, companies and individuals is also available where the constitution of a National Committee does not have a provision for the

participation for individuals and private institutions / companies. Direct Membership is also available for those countries that are not a member of ICID, provided such members abide by the constitution of ICID.

ICID achieves its mission through voluntary contribution of experts from its NCs, Direct Members and Partner Organizations. An International Executive Council (IEC) supported by Management Board (MB) governs its activities. The Commission is presently assisted in strategic, administrative and technical matters by three Administrative Committees, three Permanent Committees, three Regional Working Groups, fifteen technical Working Groups, and Task Forces (See Page 47).

International Executive Council

The International Executive Council, the General Body of the network is composed of one representative from each National Committee and the Office Bearers (OB): President, Secretary General, and nine Vice Presidents and is vested with the management of the affairs of the Commission (See Page 10).



The Council meets each year and considers all matters of policy which may be initiated or sponsored by any member NCs or OBs or by the MB and might itself initiate or otherwise advise and lay down any matter of policy. All matters affecting the executive or administrative function and financial liabilities of ICID come up before the Council whose decisions are conclusive. IEC is presided over by the President, who is also responsible for the direction to the Central Office. Secretary General, who is the Chief Executive Officer (CEC), are also serves as the Treasurer of the Commission.

National Committees

NCs are the building blocks of ICID and the main vehicle in advancing the Commission's mission. Any geographical area independently administered by a sovereign government and having interest in the activities of the Commission is eligible to become a member by establishing a National Committee.



NCs are composed of a wide network of representatives of experts from the government, technical and scientific organizations, governments and non-government institutions, irrigators, companies and individuals with interests in, concerned with, or desirous of promoting and furthering the mission and objectives of the Commission.

NCs are generally hosted by the government departments of irrigation or water resources or agriculture or rural development, provide multi-disciplinary platforms within the countries bringing together all the relevant stakeholders.

NCs host annual IEC meetings, Congresses, World Irrigation Forum, and Regional Conferences by rotation, where the experts from various NCs share the experiences and best practices. NCs disseminate the knowledge so generated and shared at the ICID platform with the national stakeholders by organizing national activities: annual conferences, workshops and seminars or through publications in their respective countries.

MB consists of the President, immediate past President, Chairpersons of the Permanent Committee on Technical Activities (PCTA), Permanent Finance Committee (PFC), Permanent Committee on Strategy and Organization (PCSO) and the Secretary General. MB is responsible for the implementation of the decisions made by the Council through the Central Office (CO) and also decides such actions in between Council meetings as are necessary to properly affect the working of the Commission.

ICID Network Countries

Sl. No.	National Committee	Acronym	Year of Joining
1.	Australia	IACID	1952
2.	Bangladesh	BANCID	1973
3.	Brazil*	ABID	1970
4.	Burkina Faso	CNID-B	2014
5.	Canada	CANCID	1956
6.	Chad	ATID	2012
7.	China	CNCID	1983
8.	Croatia	CRCID	1993
9.	Czech Republic	CZNC-ICID	1997
10.	Egypt*	ENCID	1950
11.	Estonia	ESTICID	2001
12.	Ethiopia	ETCID	1976
13.	Fiji	FIJICID	2010
14.	Finland	FINCID	2000
15.	France	AFEID	1953
16.	Hungary	HUCID	1955
17.	India*	INCSW	1950
18.	Indonesia*	INACID	1950
19.	Iran	IRNCID	1955
20.	Iraq	IRQCID	2006
21.	Ireland	IRCID	1978
22.	Italy*	ITAL-ICID	1950
23.	Japan	JNC-ICID	1951
24.	Kazakhstan	KAZCID	2006
25.	Korea, Rep. of	KCID	1969
26.	Madagascar	MADCID	2014
27.	Malawi	MALCID	1967
28.	Malaysia	MANCID	1958
29.	Mali	AMID	2005
30.	Mexico	MXCID	1951
31.	Morocco	ANAFIDE	1959
32.	Myanmar	MINCID	1962
33.	Nepal	NENCID	1973
34.	Netherlands*	NETHCID	1950
35.	Niger	ANID	2007
36.	Nigeria	NINCID	1970
37.	Pakistan	PANCID	1953
38.	Philippines	PNC-ICID	1956
39.	Portugal	PNCID	1954
40.	Romania	CNRID	1992
41.	Russia	RUCID	1955

Sl. No.	National Committee	Acronym	Year of Joining
42.	Saudi Arabia	SACID	1977
43.	Slovenia	SINCID	1992
44.	South Africa	SANCID	1993
45.	Spain	CERYD	1955
46.	Sri Lanka*	SLNICID	1950
47.	Sudan	SUCID	1964
48.	Switzerland*	CH-AGRAM	1951
49.	Tajikistan	TAJCID	2014
50.	Tanzania	TANCID	2011
51.	Thailand*	THAICID	1950
52.	Turkey*	TUCID	1954
53.	Ukraine	UACID	1996
54.	United Kingdom	IWF/ICID.UK	1951
55.	United States of America	USCID	1951
56.	Uzbekistan	UzNCID	1994
57.	Zambia	ZACID	1966
58.	Zimbabwe	ZwCID	1955
Committee			
59.	Chinese Taipei Committee	CTCID	1969
Associate Members			
60.	Afghanistan	AFGCID	2008 (2014)**
61.	Austria	AUNCID	1954 (2015)
62.	Bulgaria	BNCID	1960 (2006)
63.	Germany	GECID	1957 (2015)
64.	Greece	GRCID	1957 (2012)
65.	Guyana	GUCID	1957 (2012)
66.	Israel	ISCID	1950 (2012)
67.	Kyrgyz Republic	KYRCID	2004 (2010)
68.	Lithuania	LNCID	1994 (2014)
69.	Macedonia	MAKCID	1995 (2010)
70.	Mozambique	MOCID	1978 (2006)
71.	Poland	POCID	1967 (2006)
72.	Serbia (erstwhile Yugoslavia*)	YUGCID	2002 (2012)
73.	Slovak Republic	SKNC-ICID	1996 (2006)
74.	Syria	SYCID	1962 (2014)
75.	Uruguay	URUCID	2007 (2012)

* Founder Member

** Year in parenthesis is of the NC assuming Associate Position

ICID Membership Network 2016





Map not to scale

Prepared by: Madhu Mohanan, Program Officer

Permanent Committees

Permanent Committee on Strategy and Organization

Permanent Committee on Strategy and Organization (PCSO), as the name suggests, develops the strategy of the Commission and is concerned with increasing the membership and assisting the National Committees to become more active in their own countries to achieve the goals set for them from time-to-time. The Committee also undertakes issues related to strategic planning for ICID and coordinates the activities of Vice Presidents in their respective areas. Presently, PCSO is chaired by Vice President Hon. Dr. Hüseyin GÜNDOĞDU (Turkey), since 2014.



Permanent Committee for Technical Activities

Permanent Committee for Technical Activities (PCTA) guides the technical activities of the Commission. It guides the activities of the technical working groups, selects Questions for Congresses, themes for World Irrigation Forum, Conferences, Special Sessions, and Symposia, and makes appropriate recommendations for actions there on. Vice President Hon. Felix B. Reinders (South Africa) is chairing the Committee since 2010.



Permanent Finance Committee

Permanent Finance Committee (PFC) guides all the financial matters of the Commission. It reviews the receipts and expenditures of the Commission, advises the Council on budgetary allocations, and recommends the rate of annual subscriptions and other support from the participating countries. It guides Secretary General on the elements to be taken into account while preparing the annual budgets. Vice President Hon. Laurie C. Tollefson (Canada) is chairing the Committee since 2014.



Central Office

Secretariat of ICID, known as the 'Central Office (CO)' is located in New Delhi, India. Secretary General, as the Chief Executive Officer is responsible for the day-to-day affairs of CO and is assisted by professionals and support staff. A Staff Committee (SC) reviews and formulates the work procedures and the staff structure of CO, in keeping with the dynamic requirements, and advises the Secretary General.



The Central Office facilitates a knowledge sharing platform by hosting the website (www.icid.org) to fulfil its mission. CO also facilitates and coordinates annual meetings of various workbodies and Executive Council by compiling agenda and minutes, disseminating knowledge by bringing out in-house periodicals like weekly e-Bulletin, monthly News Update, and quarterly ICID News on regular basis in English and French (ICID official languages). It also supports Chair of the Editorial Board in publishing of the ICID Journal 'Irrigation and Drainage'. CO coordinates and assists the host NCs in the organization of the key ICID events like Congress, World Irrigation Forum, and Regional Conferences. CO brings out various technical publications, reports from time-to-time and coordinates various ICID Awards. It also houses a library having good collection of technical books, reports, proceedings, periodicals and ICID publications.

The Central Office building is maintained as a green building with provision of solar energy generation system commissioned in 2015 for reducing its Carbon Footprints, rainwater harvesting and use of raw water for gardening purposes. On an average the solar power unit offset emissions of nearly 28 tons of carbon dioxide per year.



Milestones in the history of ICID

- Released MTD CD-ROM in multiple languages in 2010
- Release Special Postal Cover on 60th Anniversary, 2009
- Country Policy Support Program (CPSP), 2002-2007
- Start of Best Paper Award, 2006
- Best Performing WB and NC award, 2003
- Released 1st Edition of MTD CD-ROM, 2001
- Renamed ICID Journal as "Irrigation and Drainage", 2001

2001-2010

2011-2016

- Renamed International Micro Irrigation Symposium as International Micro Irrigation Conference, 2015
- Established ICID Young Professional e-Forum (IYPeF), 2015
- Released web version of the Multilingual Technical Dictionary (MTD), 2015
- Organized First World Irrigation Forum (WIF1), 2013
- Established Scheme for Recognition of Heritage Irrigation Structures (HIS), 2013
- Established Scholarships to Young Professionals, 2013
- Micro Irrigation Congress renamed as International Micro Irrigation Symposium 2012
- Direct Membership to Companies /Institutions and Individuals, 2012
- Launched on Social Media (Facebook, YouTube), 2012
- Established World Irrigation and Drainage Prize, 2012
- Elected to WWC Board of Governors, 2012
- ICID e-Bulletin (English and French) started 2012

1991-2000

- International Micro Irrigation Congress taken over by ICID, 2000
- Guidelines on Benchmarking, 2000
- Release of Special Postal cover on Diamond Jubilee Year, 2000
- Launch of Website, 1999
- Start of WATSAVE Awards 1998
- ICID Journal started, 1995
- Young Professional Forum (YPF) established, 1994
- Global Water Saving/ Conservation Program initiated, 1993
- Change of Logo, 1992

1981-1990

- IPTRID started, 1990
- ICID News Update started, 1990
- Joint Publication with World Bank, 1989
- Received UN Peace Messenger Award, 1987
- ICID Newsletter started, 1986
- First Worldwide Micro-Irrigation Survey, 1982
- N.D. Gulhati Lecture started, 1981

1971-1980

- First Irrigation and Drainage Workshop, Wageningen, 1978
- Joint Publication with FAO, 1975
- Release of Special Postal cover on Silver Jubilee Year, 1975

1961-1970

- Multilingual Technical Dictionary (MTD) released, 1967
- Central Office building inaugurated by the then Vice President of India, Dr. Zakir Hussain, 1966

1950-1960

- Irrigation and Drainage - A Global Review, the First Publication released, 1955
- ICID Bulletin started, 1952
- First Congress organized in New Delhi, India, 1951
- Change of name as International Commission on Irrigation and Drainage (ICID), 1951
- First International Executive Council (IEC) meeting in Shimla, India, 1950
- Established on 24 June 1950 as International Commission on Irrigation and Canals (ICIC), with 11 founding member countries

ICID Office Bearers

President



Dr. Saeed Nairizi
(Iran)
[2014-2017]

Secretary General



Er. Avinash C. Tyagi
(India)
[2012-2018]

Vice Presidents [2013-2016]



Dr. Ir. Basuki
Hadimoeljono
(Indonesia)



Mr. Kadhim Mohsin
Ahmed
(Iraq)



Er. A.B. Pandya
(India)

Vice Presidents [2014-2017]



Dr. Mohamed Abd-El-
Moneim Wahba
(Egypt)



Dr. Ding Kuntun
(China)



Mr. Bong Hoon Lee
(Republic of Korea)

Vice Presidents [2015-2018]



Prof. Dr. Charlotte de
Fraiture
(The Netherlands)



Mr. Ian William Makin
(UK)



Prof. Dr. Abdelhafid
DEBBARH
(Morocco)

Working Together

The year 2015 was momentous with the world witnessing new agreements on Sustainable Development and Climate Change. Under the United Nations Framework Convention on Climate Change (UNFCCC).

In September 2015, the Millennium Development Goals (MDGs) have been replaced by Sustainable Development Goals (SDGs) by the UN General Assembly in order to make the world we want as given below:

No.	Sustainable Development Goals	Outcome
1.	End poverty in all its forms everywhere	No Poverty
2.	End hunger, achieve food security and improved nutrition and promote sustainable agriculture	Zero Hunger
3.	Ensure healthy lives and promote well-being for all at all ages	Good Health & Well-being
4.	Ensure inclusive and quality education for all and promote lifelong learning	Quality Education
5.	Achieve gender equality and empower all women and girls	Gender Equality
6.	Ensure access to water and sanitation for all	Clean Water and Sanitation
7.	Ensure access to affordable, reliable, sustainable and modern energy for all	Affordable and Clean Energy
8.	Promote inclusive and sustainable economic growth, employment and decent work for all	Decent Work and Economic Growth
9.	Build resilient infrastructure, promote sustainable industrialization and foster innovation	Industry, Innovation and Infrastructure
10.	Reduce inequality within and among countries	Reduced Inequalities
11.	Make cities inclusive, safe, resilient and sustainable	Sustainable Cities and Communities
12.	Ensure sustainable consumption and production patterns	Responsible Consumption and Production
13.	Take urgent action to combat climate change and its impacts	Climate Action
14.	Conserve and sustainably use the oceans, seas and marine resources	Life Below Water
15.	Sustainably manage forests, combat desertification, halt and reverse land degradation, halt biodiversity loss	Life on Land
16.	Promote just, peaceful and inclusive societies	Peace, Justice and Strong Institutions
17.	Revitalize the global partnership for sustainable development	Partnerships for the Goals



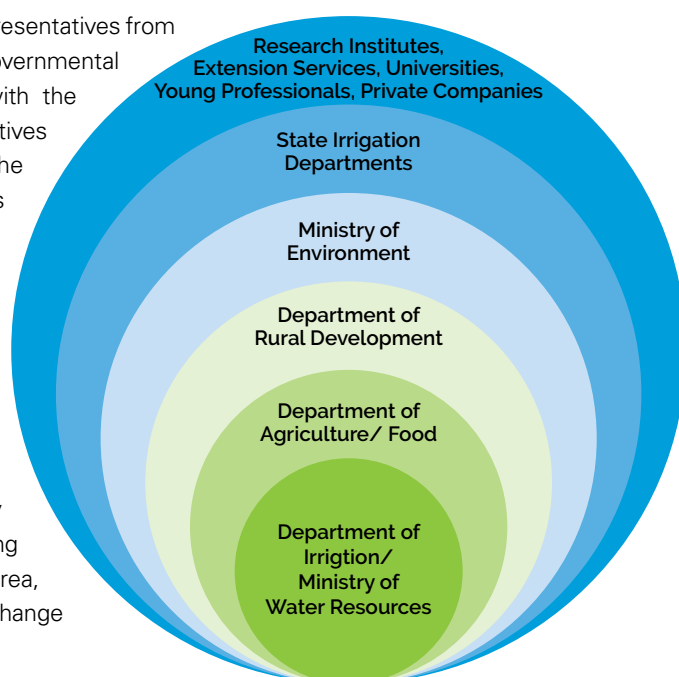
ICID has been spearheading many global water initiatives in irrigation, drainage and flood management sector, during the last one year at various levels - national, regional and international. For these initiatives to succeed, ICID gives a due share of importance to cooperation and collaboration amongst like-minded international organizations in government and private sector which include global, regional and state level players. The ICID's collaboration has resulted in furthering its objective of providing a 'Water secure world free of poverty and hunger through sustainable rural development'.

National Committees

The 2030 Agenda for Sustainable Development stresses the importance of developing national strategies for the promotion of sustainable and productive activities through partnerships, and encourages Governments to create a climate that is conducive to increasing the greater involvement of all relevant stakeholders in every sphere of development, including agriculture water management.

National Committee constituted with the composition of representatives from government(s), technical and scientific organizations, non-governmental organizations, research institutions, academicians, etc. with the interest in promoting and furthering the mission and objectives of the Commission. National Committees (NCs), with the participation of experts from various ministries and disciplines generally represent the entire spectrum of government institutions involved in agriculture water management from within the country.

Sustainable development requires integrated approaches that require close collaboration among various NCs, organizations and disciplines. NCs are continuously making efforts in this direction. In addition, various NCs have been making bilateral arrangements to collaborate on mutually interesting topics and exchanging technical visits among their members. NCs from China, Indonesia, Malaysia, Korea, Turkey and Iran are actively collaborating through various exchange programs.



Myanmar, Sudan and Ukraine re-joined ICID network during the financial year 2015-16. Dr. Ahmed Mohamed Adam was instrumental in reactivating the Sudanese National Committee (SUCID). Presently, ICID has a country membership network of 59 full members and 16 associate members (See Page 11).

In the following paragraphs a brief report of some of the activities of some of the NCs is presented, giving glimpse of activities the NCs are involved in the countries, the mechanism they use for disseminating the shared knowledge within the countries and the ways in which they exchange experiences among themselves through bilateral arrangements.

TARGET 17.16

Enhance the global partnership for sustainable development, complemented by multi-stakeholder partnerships that mobilize and share knowledge, expertise, technology and financial resources, to support the achievement of the sustainable development goals in all countries, in particular developing countries.



Australian National Committee

Mr. Richard Hopkins and Dr. Ian Reid (Australia) from the International Centre of Excellence in Water Resources Management (ICE WaRM), a joint venture of five Australian Universities with main activity related to education (post graduate course in WRM) and training of professional working in areas related to water resources management visited ICID Central Office. It was agreed that ICE WaRM and ICID, in association with IACID will explore following area of mutual interest: (a) Capacity and skill development, training both short and long term for junior and middle level staff; (b) Development of e-Learning module in the field of agriculture water management and flood management (c) Developing process of certification and training courses for developing countries. ICE WaRM will explore possibilities of arranging financial support from Australian government for developing e-Learning courses especially for Africa.

A three-day Irrigation Australia's 2015 Regional Conference titled 'Peri Urban – Irrigation in a Changing Landscape' was organized from 26 to 28 May 2015 in Western Sydney, NWS, which covered water quality aspects, need for agriculture to find alternative water sources, providing infrastructure, and developing policy to provide a balance between the needs of the farming sector and residents. The conference addressed the latest issues in irrigation and water management, included green walls, intensive horticulture, irrigation technology, water monitoring, management of water resources etc. The Smart Watermark Forum was also organized with this conference. The 2015 Irrigation Australia International Conference and Exhibition was organized from 24-26 May 2015 in Victoria, Australia. The Conference addressed the latest issues in irrigation industry to increase knowledge and capability of irrigation solutions, with focus on agricultural and urban industries.



Mr. Bryan Ward has taken over as new Chief Executive Officer (CEO) of Irrigation's Australia Limited (incorporating IACID).

Bangladesh National Committee

BANCID organized a Seminar on the theme 'Water and Jobs' on 22 March 2016 in Bangladesh University of Engineering and Technology (BUET) in association with Ministry of Water Resources, Bangladesh Water Development Board (BWDB), Water Resources Planning Organization (WARPO), Institute of Water Modelling (IWM), Center for Environmental and Geographic Information Services (CEGIS), and Bangladesh Water Partnership (BWP). Eminent water experts and engineers from different government and non-government organizations, academicians, representatives from NGOs attended the seminar, Chaired by Engr. Md. Masud Ahmed, Director General, BWDB and Chairman, BANCID. The Seminar discussed the need for coordinated, coherent policies and integrated management plans among the water related organizations for sustainable water resources development in Bangladesh. It was highlighted that priority should be given for constructive and meaningful dialogue with the neighbouring countries for equitable water of the common rivers.



Canadian National Committee

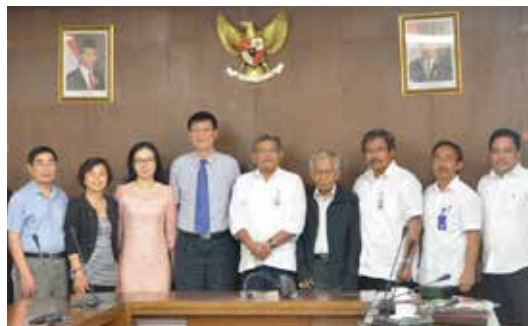
Vice President Hon. Laurie C. Tollefson (Canada) attended the Conference on International Convention on Agricultural Engineering 2016 organized by the Research Institute on Agricultural Engineering (IAgric) under the Ministry of Agricultural in Cuba from 22-25 March 2016 in Cuba. The Conference contributed to the national debate on difficulties and challenges in agricultural engineering in Cuba and



abroad. During the conference, a large number of countries, primarily Spanish speaking such as Mexico, Central American countries, Caribbean, South America and Spain participated in various sessions. VPH Tollefson took this opportunity to re-introduce to the Cuban Officials ICID highlighting its new initiatives to help reactivation of the Cuban National Committee and made a presentation on 'Irrigation and drainage and its relation to adaptation to climate change and food security'.

Chinese National Committee

For sharing experiences and promoting mutual understanding, and cooperation within the framework of ICID, the National Committees undertake exchange visits. As part of a Memorandum of Understanding (MoU) between Chinese National Committee on Irrigation and Drainage (CNCID) and Indonesian National Committee of ICID (INACID), a delegation of CNCID led by Dr. Ding Kunlun, Vice President of ICID and Deputy Secretary-General, CNCID visited Indonesia from 16-21 November 2015. The delegation consisting of administrators and experts from the Ministry of Water Resources, China Institute of Water Resources and Hydropower Research (IWHR) and Shijin Irrigation Scheme Administration of Hebei Province undertook a comprehensive study of irrigation, drainage and agricultural water management issues. The two sides exchanged experiences, shared challenges, and future plans concerning irrigation, drainage, and water management, and agreed to further the exchange between experts from CNCID and INACID. During the visit, CNCID delegation held a series of meetings with INACID members, Jatiluhur River Authority, Citarum River Basin Organization, Research and Development Center for Water Resources, and Bali River Basin Organization. The two sides shared knowledge on irrigation modernization, irrigation scheme management, integrated water resources management, and participatory irrigation management.



President Dr. Saeed Nairizi and Secretary General Avinash C. Tyagi held a meeting with Mr. Wang Aigou, Chairman of CNCID, Dr. Kuang Shangfu, President IWHR, in presence of and other CNCID officials on shortage of water diverted for agriculture which remains a big challenge. China has placed great emphasis on policy incentives for water saving which has resulted in increased productivity in last 10 years without any increase in water withdrawals for agriculture. CNCID expressed its support to the Water Systems Heritage (WSH) programme. Interacting with CNCID members under the "Global Vision Forum" series, President Dr. Nairizi shared his thoughts on the "Water, Energy, Food and Environment Nexus Approach". The working arrangement on collaboration with the Ningxia Association of Hydraulic Engineering and the Committee of Efficient Use of Water Resources Forum were also discussed.



Hon'ble Vice Minister of Water Resources Mr. Li Guoying, during the visit of President Dr. Nairizi on 15 July 2015, explained the water challenges being faced by China and the solutions being adopted by the Government to make the development sustainable. PH Dr. Gao Zhanyi and VP Dr. Ding Kunlun and SG Er. Avinash C. Tyagi and officials of the Ministry of Water Resources (MWR) also attended the meeting. He expressed his continued support to ICID to carry out the good works being undertaken by the Commission. The Vice Minister suggested that ICID should organize activities to promote SDGs and pointed out the need to coordinate research on "Water Requirement of Crops"; "Standards in Irrigation and Hydroponic" and expressed the willingness of CNCID to participate in the same. A Letter of Agreement (LoA) between Ministry of Water Resources and ICID was signed by Mr. Li Ge, Deputy Director General, MWR of PR of China and Secretary General, ICID for support of various activities as delineated in LoA.

President Dr. Saeed Nairizi and Secretary General Avinash C. Tyagi accompanied by Dr. Bedito Braga President WWC and Prof. Dogan Altinbilek, Vice President, WWC also visited the National Water Museum of China (NWMC).

Estonian National Committee

A three day Conference on 'Agricultural drainage systems, their maintenance and cross border cooperation' was organized by ESTICID from 20-22 May 2015 along with the traditional Baltic Drainage Conference. Experts from Finland, Latvia, Lithuania, Belarus, Georgia and Russia attended the conference. During the conference, land improvement system with efficient co-operation between neighbouring countries and cross-border cooperation issues were discussed, in detail. It was highlighted that the Estonia has the largest supplies of agricultural land with the largest proportion of forests - more than a half of mainland covered with forest - having approximately 2.2 million hectares of forest land and 1.3 million hectares of drained land. Estonia is planning to continue with investment into land improvement in 2014-2020. About 11 thematic papers were presented by the member countries. Mr. Hannes Puu (Estonia) has taken over as the new Chairman of ESTICID.

French National Committee

Association Française pour l'Etude des Irrigations et du Drainage (AFEID), the National Committee of ICID for Water, Irrigation and Drainage organized the 26th European Regional Conference, along with the 66th IEC Meeting at Montpellier, October 2015. The main theme of the Conference was "Innovate to improve irrigation performance" and three sub-themes (a) Innovations for smallholders in irrigation; (b) Wastewater use in agriculture and (c) Governance of surface water and groundwater. During the conference about 10 international workshops, were co-organized with ICID Working Groups and various partners, as well as research projects. More than 700 participants from 65 countries participated in the rich exchanges of experiences with more than 300 papers and posters. Researchers, engineers, administration officers, donors and business operators shared their experiences and knowledge. Mr. Jean-Yves Grosclaude has taken over as new President of AFEID.



Indian National Committee on Surface Water

A two-day Conference JAL MANTHAN-2, on the theme "Integrated Approach for Sustainable Water Management" was organized by Ministry of Water Resources, River Development and Ganga Rejuvenation from 22-23 February 2016 in New Delhi jointly with the INCSW. The Conference was inaugurated by Sushri Uma Bharati, Hon'ble Union Minister of Ministry of Water Resources, and attended by ministers from various states and a large group of high level officials from various state governments. Other participants included eminent experts/ professionals in the water sector, representatives of NGOs etc. Er. Avinash C. Tyagi, Secretary General attended the event and shared his views regarding water resources development and management at basin level. Er. G.S. Jha has taken over as new Chairman of INCSW and visited ICID Central Office on 1 March 2016.



INCSW organized a lecture by Dr. Young Deuk Kim, Director of the International Education and Exchange Center (IEEC) of the Korea Rural Community Corporation (KRC) on "The Water Footprint – A Policy Tool". SGH, ICID Er. M. Gopalakrishnan presided over the function, which was attended by more than 50 senior engineers from INCSW. Dr. Kim was on a visit to India as part of a delegation visiting New Delhi to attend the workshop on ISO/TC-207 organized by Bureau of India Standardization (BIS), New Delhi and visited ICID Central Office on 11 September 2015.

Iranian National Committee

President Dr. Saeed Nairizi visited ICID Central Office on 16 March 2016. He was accompanied by Mr. Alireza Salamat. Making right use of the 58th Board of Governors meeting of WWC at Jodhpur, 18-19

March 2016, ICID Central Office organized a preparatory meeting of the International Committee on Water Systems Heritage (WSH) Program, Chaired by President Dr. Nairizi. Using this opportunity President Dr. Nairizi inspected the Central Office and discussed emerging issues, particularly on ICID's role in WSH and issues related to the 2nd World Irrigation Forum (WIF2).



An IRNCID delegation comprising experts from Iran Water Resources Management Company, Khuzestan Water and Power Authority, and Iran Energy and Water Development Company visited various water resources structures and Water Users Association in Turkey from 16-22 May 2015. The delegation visited different parts of the GAP Projects including the Water Management Transition, Diyarbakir's WUAs and Irrigation Structures, Silvan Dam Delivery Channel, Alkamra Dam, Citin Dam and Network, Batman Irrigation and Drainage Networks, Pumping Station as well as Batman Greenhouse Complexes. Technical exchange and discussion sessions were organized between the IRNCID delegation and the DSI Regional Management teams. The visit was part of the follow up on an MoU on bilateral collaboration between IRNCID and TUCID signed in October 2013.

President Dr. Saeed Nairizi along with Secretary General Avinash C. Tyagi and Mr. Ali Reza Salamat participated in the 55th BoG of WWC meetings from 16-17 July 2015 in the beautiful city of Hangzhou located on the bank of River Qiantang in the Zhejiang Province of PR of China.

Iraqi National Committee of Irrigation and Drainage

On 22nd March 2016, the World Water Day 2016 on the theme "Water and Jobs" was celebrated by Ministry of Water Resources under the patronage of H.E. Eng. Mohsin Al-Shammari, Minister of Water Resources, where the relationship between water and jobs were highlighted. The speakers highlighted the importance of following the principle of integrated management of water resources, maintaining the ecosystem in river basins, securing water in light of the growing population, climate changes and making water a tool of cooperation and peace among all peoples of the world. A special lecture on 'Iraqi water security between reality challenges and future prospects' explaining the importance of ensuring the water security, the internal and external Iraqi water resources problems, climate changes, technical solutions, and utilization of modern techniques in irrigation was also delivered.



IRQCID has been exploring the possibility of cooperation with JICA on the reclamation projects in all Iraqi governorates. A seminar was also organized in collaboration with JICA in January 2016 deliberating on the future of water users associations in Iraq with emphasis on the role of government in activation of these associations and using modern irrigation techniques for minimizing wastage of water, achieving equity in distribution of water and maximizing agricultural production. IRQCID and the Dutch Consulate for Baghdad explored the ways of cooperation between the two countries in water sector in areas of groundwater exploration, combating desertification, increasing cultivated lands and introduction of modern technics in the field of irrigation.

Irish National Committee

Irish National Committee for Irrigation and Drainage (IRCID) together with the UNESCO International Hydrological Program (IHP) organized the 16th Irish National Hydrology Conference on the theme "Data and Sustainability" on 17 November 2015. The Conference covered a wide range of issues such as: Hydrological Data Acquisition; Flood Risk Management; Statistical Hydrology; and Environmental Sustainability. More than 130 participants from Ireland, Portugal, Northern Ireland and the United Kingdom attended the Conference. Dr. Oliver Nicholson, Chairman of IRCID launched the IHP-ICID Ireland PhD Travel Grant Scheme, to help the PhD students in Ireland to travel abroad and present their research on an international platform. A total number of 9 papers were presented with additional 8 papers presented as posters.

Italian National Committee

Dr. Marco Arciero (Italy), Secretary General of the Italian National Committee of ICID (ITAL-ICID) represented ICID at the 39th Session of the Governing Council of IFAD from 17-18 February 2016 at Rome. The theme of the Session was ‘Inclusive Investment - Rural people, state and business in the post-2015 agenda’, with the vision to end poverty and hunger by 2030, the Session emphasized the target initiated during its last meeting in 2015. The vision underpins the Sustainable Development Goals (SDGs), the Financing for Development Agenda and the Paris Agreement on climate change together with a new road map for improved well-being and prosperity for all.



Japanese National Committee

JNCID was host to President Dr. Nairizi, during his visit to Japan from 2-10 April 2015 on his way to attend WWF7 where he paid a courtesy call on Mr. KOIZUMI, the State Minister of Agriculture, Forestry and Fisheries, Japan on 6 April. During the meeting H.E. Mr. KOIZUMI lauded ICID’s contribution to irrigation and drainage sector and reiterated the commitment of Japan to the activities of ICID. He also expressed his appreciation for the newly introduced program on Heritage Irrigation Structures (HIS), which includes nine structures from Japan.



President Dr. Nairizi in his interaction with JNCID members, including Dr. Sato, Chairman, JNCID and the Office Bearers of JNCID, expressed his gratitude for the JNCID’s active participation in various programs of ICID, particularly, he thanked Vice President Hon. Ota and his team and hoped that JNCID will continue to play active role in the future ICID programs. A commemorative seminar was organized by the Japanese Association of ICID, which was attended by a large group of professionals. President delivered a Keynote speech on “Water Productivity a Road to Sustainable Agriculture”.

VPH Ota, heading the TF-WWF7, chaired the Thematic Session 2.1.3 “Modernization of irrigation/drainage schemes for food security, rural prosperity and poverty alleviation” at WWF7 in Daegu, South Korea. VPH Ota in cooperation with VP Bong Hoon Lee from South Korea organized a poster exhibition on behalf of ICID during WWF7 where more than 20 countries presented the work done by them. JNCID also set up a booth in the WWF7 exhibition. The model displayed was eye-catching and attracted large number of visitors.

JNCID organized its annual meeting on 25 September 2015 and 22 January 2016 where action plan and outcome of IEC and WGs were discussed. In addition, a special meeting for HIS was also organized. The Japanese Association of ICID (JAICID), a support organization for JNCID organized an annual general body meeting on 8th July 2015 wherein a presentation titled “Water and food in Asia” was delivered by Dr. Hatcho. A seminar of Working Group on Young Irrigation Professionals Forum (WG-YPPF) was organized on 14 October 2015 wherein five presentations covering a broad range including ODA by Japan, hydrological research in Uganda, research of decision making for paddy cropping in Laos were made.

Korean National Committee

A delegation led by Dr. Lee Sang-Mu, CEO, Korea Rural Community Corporation (KRC) and the Past President of Korean National Committee on Irrigation and Drainage (KCID) accompanied by Vice President Mr. Lee Bong Hoon and others visited India and the Central Office on 23rd May 2015. Mr. Lee reiterated the commitment of KRC to support ICID through KCID. Dr. Lee Sang-Mu highlighted the importance of broadbasing NCs and informed that KCID consists of various allied groups, which strengthens the activities.

Dr. Lee Sang-Mu expressed the intention of KRC to continue to support roundtable meetings during future ICID annual meetings on the lines of 22nd ICID Congress. It was agreed that the Roundtable for the Asian Region would be most appropriate during the 2nd World Irrigation Forum (WIF2), in November 2016 at Chiang Mai, Thailand; and the Roundtable for Americas would be appropriate during the 23rd ICID Congress, 8-14 October 2017 at Mexico City, Mexico.



KCID supported few young professionals from Africa and Asia to attend the 66th IEC meeting in Montpellier, October 2015. Secretary General Tyagi informed the delegation, the proposal for setting up a Technical Support Unit (TSU) that would help the developing countries in formulating feasibility reports for certain projects. Dr. Sang-mu Lee enthusiastically welcomed the idea of TSU and promised full support of KRC and KCID.

Dr. Lee highlighted that rural development is an integrated part of the irrigation development; hence, the topic needs to be given priority in ICID activities. Dr. Lee Sang-Mu also expressed his thanks for facilitating a meeting between KRC and the official delegation from Govt. of Gujarat regarding the proposed Kalpasar Project in Saurashtra region of Gujarat, India.

During the 14th Asia Pacific Agricultural Policy Forum hosted by Dr. Lee Sang-Mu, CEO of KRC from 31 August to 1 September in Olympic Parktel (Seoul), Secretary General Avinash Tyagi actively participated on regional integration and public private partnership for sustainable development. KCID under the leadership of Vice President Bong Hoon Lee celebrated the ICID Foundation Day in a different way by sharing the cake piece virtually with ICID fraternity.

MoU between IRNCID and KCID

A Memorandum of Understanding (MoU) was signed between IRNCID and KCID on 28 February 2016 in order to promote water cooperation on agricultural and rural development at IRNCID Secretariat, Tehran. Iran. The MoU cover activities related to: (a) Water Resources Management in Agriculture and Rural Development; (b) Water and Agricultural Information and Communications Technologies; (c) Development, Operation and Maintenance, of Groundwater and Monitoring System; (d) Bilateral Exchange of Information and Technology; (e) Studies and Researches on Irrigation and Drainage; and (f) Undertaking Technical visits.



Malaysian National Committee

The Ministry of Natural Resources and Environment in partnership of UNESCO-IHP Malaysia, Ministry of Energy, Department of Irrigation and Drainage organized the World Water Day on 24 March 2016. H.E. Minister of Natural Resources and Environment inaugurated the event and focused on the importance of wise water consumption towards sustainable development of the country as well as preventing water scarcity in the future due to climate change. The celebration included water theme-based competitions, Dialogue Programme, Talk Show, Young Leaders Camp etc. followed by environmental and water exhibition.



MANCID, as part of its 20th Annual Conference organized a two-day workshop on the theme of WIF2 "Water Management in a Changing World: Role of Irrigation for Sustainable Food Production" from 4-6 October 2015. More than 138 participants, including professionals and practitioners from various sectors, attended the conference. Ir. Haji Mat Hussin bin Ghani, Chairman, MANCID delivered the Keynote Address during the Opening Ceremony on 5 October 2015.

Mr. Mohd Johaary bin Abd Hamid from Malaysian Agricultural Research and Development Institute (MARDI) delivered the talk during the knowledge sharing session on “Young Professional as Agents of Change and Innovation toward Sustainable Food Production.” Participants visited Malaysian Agricultural Research and Development Institute (MARDI) Agro-technology Park and Buffalo Park. Ir. Hj. Mat Hussin bin Ghani has taken over as the new Chairman of MANCID.

Pakistan National Committee

Pakistan National Committee on Irrigation and Drainage (PANCID) jointly with the Government of Baluchistan and M/s. Better Engineered Solutions (BES) organized a Seminar where a technical presentation was delivered by Mr. Ryon Horton (USA), Vice-President of Innovative Material System (IMS) Dredger in Islamabad, Pakistan. More than 30 experts from all over the country participated. PANCID together with the Pakistan Engineering Congress (PEC), Water and Power Development Authority (WAPDA), University of Agriculture Faisalabad and University of Agriculture Peshawar organized a Seminar on the occasion of World Water Day 2016 on the theme “Water and Jobs” on 22nd March 2016 in Lahore. VPH Engr. Shams-ul Mulk, former Chairman WAPDA, was the Chief Guest. More than 13 papers were presented by authors related to the theme “Water and Jobs”.



Vice President Ian Makin and Chair of the Working Group on Modernization and Revitalization of Irrigation Schemes (WG-M&R) visited Pakistan from 29 November to 04 December 2015 and met the PANCID officials. PANCID team consists of Mr. Javeed Bokhary, President/Chairman and Mr. Asjad Imitiaz Ali, Secretary of PANCID discussed various issues related to PANCID including membership of WG-M&R, active participation of PANCID in WIF2, IYPEF and ICID Vision 2030. Mr. Ali briefed VP Ian Makin on the status and vision for water in general and irrigation in particular in Pakistan and highlighted the critical importance of irrigated agriculture to the national economy. He also briefed about the 4th National Flood Plan finalized for seeking financial support to address the challenges of repeated flood events and climate change.

Philippines National Committee

President Dr. Nairizi, Secretary General Tyagi and Executive Director Varma, visited the National Irrigation Administration (NIA) of Philippines on 21 January 2016, which hosts the Philippines National Committee on Irrigation and Drainage (PNC-ICID). Er. Florencio f. Padernal, Administrator of NIA and Chairman, PNC-ICID welcomed President and his team. A presentation on the NIA activities was made which brought out the importance that Government of Philippines is giving to irrigation and drainage sector. The ICID team also had a brief interaction with a group of young professionals who were undergoing induction training at NIA. President Dr. Nairizi announced that the young professional who tops the course will be considered for the ICID scholarship to attend WIF2 in Chiang Mai in November 2016. While addressing the young professionals, Secretary General invited all the YPs to join the IYPEF.



Russian National Committee

On invitation from the RUSCID under the Ministry of Agriculture of the Russian Federation, President Dr. Saeed Nairizi visited Russia from 23-25 June 2015 and attended an event at the State Agrarian University, Moscow. During the event Dr. Nairizi delivered a lecture titled ‘The role of land reclamation in guaranteeing the global food security’ at the Kazan State Agricultural University and met Prof. Vasili Nechaev, Head of State Agrarian University. He emphasized the use of land-reclamation techniques to increase fertility of soils in support of poverty alleviation. Dr. Nairizi also emphasized

the importance of imparting training for Agrarian specialists to fulfil their mission and highlighted the need for creation of a network, to compile world's best practice in education and researches in the field of land reclamation. President Dr. Nairizi also participated in a Forum titled 'International Field days in the Volga Region' at Kazan city in Republic of Tatarstan. H.E. Marat Akhmetov, Minister of Agriculture of Republic of Tatarstan, introduced the manufacturing capabilities of irrigation equipment in Russia. Mr. Mars Hismatulin, Managing Director "Tatmeliovodhoz" informed that 1.3 thousands hectares of irrigated plots were developed in last two years under the Federal Targeted Programme for the Development of land-reclamation which has resulted in the increase in yield of potatoes from 45 to 65 tons per hectare.



South African National Committee

SANCID participated in a three-day Water Research Commission (WRC) Symposium and Water-tech Summit: Water Research Development and Innovation (RDI) organized from 16-18 September 2015 in South Africa. The theme of the Symposium was 'Universal Access, Wherever You are'. During the Symposium, an integrated approach addressing the challenges of future water uncertainties, climate change, and changing habits, diets, lifestyles and water-demand patterns were discussed by means of showcasing the most impactful water and sanitation research and technological innovations from South Africa member countries participated in the Symposium. Policy-makers received up-to-date overviews of research outcomes, adoption and emerging issues, and were given the opportunity to express their research needs. The symposium was also an excellent platform for knowledge exchange between researchers, research providers and industry leaders; participants were exposed to opportunities for collaboration that enabled them to derive maximum benefit from available research funds. As part of the knowledge dissemination, VPH Reinders and VPH Backeberg contributed interesting articles in ICID News.

VPH Reinders participated in the International Workshop on "Prospects for solar-powered irrigation systems in developing countries" organized by the FAO from 27 to 29 May 2015 at Rome, Italy. The workshop took stock of the experiences and existing tools and practices for the use of solar power for irrigation and to identify the key challenges and constrains for the development of this technology in developing countries. The workshop brought together a large number of authorities, experts, and researchers associated with Solar Powered Irrigation Systems (SPIS).

Comité Español de Riegos y Drenajes

The Spanish Association on Irrigation and Drainage (AERYD) with the support of the ICID Spanish National Committee on Irrigation and Drainage (CERYD) successfully organized the 33rd Spanish National Congress on Irrigation and Drainage from 16-18 June 2015 in Valencia (UPV), Spain. The Congress was attended by nearly 180 participants, and around 70 technical papers were presented in four thematic categories.



During the Congress, a Roundtable was also organized on the theme "Integrated management of irrigation, Use and Maintenance of Infrastructures" chaired by Mr. J.R. Lopez Pardo (Ministry of Agriculture), and presentation on Technology and Management Innovation at irrigation modernization; Agricultural and Energy Efficiency; and Use of regenerated and desalinated water for irrigation were made.

Sri Lanka National Committee

SLNICID together with the Ministry of Irrigation launched an island wide tree plantation campaign and organized a Seminar series under



the theme 'Facing Climatic Challenges under the Shade of a Protected Environment' on 5 June 2015 as part of World Environment Day celebration. The event was initiated at 10 major district irrigation schemes across the country with the participation of irrigation sector officials as well as with the support and contribution from the school children. The Irrigation Department in collaboration with Forest Department and Farmer Organizations, mainly focused on introducing live fences to erect along the upstream of reservoir periphery, toe of reservoir bunds, together with the canals as these would enrich the biodiversity in the vicinity and also preserve the water quality while preventing illegal encroachments of project lands.

Sudanese National Committee

On the occasion of the World Water Day with the theme "Water and Jobs", a Workshop on 'The Development of the Rahad Irrigation Scheme' was organized on 22 March 2016 by the Water Management and Irrigation Institute (WMII) at University of Gezira, Sudan. The Commissioner of Al Fau Locality, the Director-General of Rahad Agricultural Corporation (RAC), the Dean of the Water Management and Irrigation Institute (WMII), the Director of the Agricultural Research Station (ARS) at Al Fau along with the irrigation and agricultural staff of the schemes, the local banks, group of farmers, students, media and NGOs representatives participated in the workshop. The Commissioner highlighted the role of Rahad Scheme in the development of the area, while Chair of the Farmers Union focused on cooperation with the management of the scheme to increase the agricultural production and achieve the national goals in securing food security.



Dr. Ahmed Mohamed Adam, Chairman, SNCID addressed the main topic of the workshop "Development of the Rahad Scheme" with an area of 126,000 ha. Presenting its various components constructed in 1977 and laid focus on the productivity of the main crops, cotton, sorghum and groundnuts during the life of the project. Dr. Adam presented the components of the scheme which were rehabilitated in 2014 in phase 1 and financed by OBEC and Sudan Government (\$20m + \$5.0m). More than 100 participants from various departments and institutions attended the workshop. A large number of participants actively participated in the open discussions and expressed their valuable comments and observations.

Thai National Committee

The 2nd World Irrigation Forum (WIF2), together with 67th International Executive Council (IEC) Meeting will be organized by TTHAICID from 6-12 November 2016 at Chiang Mai, Thailand and in partnership with FAO, IWMI, GWP, ADB, ICRISAT, WWC, AIT and 2iE. THAICID convened the International Steering Committee (ISC) meeting at Chiang Mai and Bangkok, from 11-12 February 2016. The meeting was co-chaired by President Dr. Saeed Nairizi and Mr. Suthep Noipairoj, Chairman, THAICID, among others. ISC members visited the Chiang Mai International Exhibition and Convention Centre (CMECC), Chiang Mai, Thailand, to see the logistic facilities. Secretary General shared the background and objectives of WIF and shared experiences from organization of WIF1 in order to appraise the members of the National Organizing Committee (NOC) of the requirements for the smooth and successful organization of WIF2.



As part of publicity for WIF2, an interview of Dr. Somkiat Prajamwong, Secretary General of THAICID was aired on 'Thailand Today' TV network which can be accessed from (www.rid.go.th/thaicid) or ICID Facebook page (www.facebook.com/icidat) and YouTube channel (www.youtube.com/icidonline).

Turkish National Committee

TUCID organized a side event on “Ensuring Sustainability of Irrigation Structures after Transfer to Water User Organizations (WUOs)” in April 2015 during the 7th World Water Forum in Daegu and Gyeongbuk, South Korea where President Dr. Saeed Nairizi delivered the Keynote address. Efforts of various National Committees in this area were demonstrated through a poster session wherein more than 20 NCs presented their efforts in improving their interaction with various stakeholders.



U.S. National Committee

USCID organized the water management conference titled ‘Emerging Issues in Water Management Governance’ with other topics relating to technology, irrigation system reliability, and the water-energy nexus from 17-20 November 2015 at New Mexico, USA. Some of these topics form part of the topics for discussion at WIF2. The Conference also featured a panel discussion on the Colorado River, two workshops, two study tours and an exhibition. More than 35 papers were presented and presentations made during the conference. Engr. Estevan López, Bureau of Reclamation Commissioner delivered the Keynote Address. Prof. Brian Wahlin, President of USCID, highlighted the status of USCID membership, finances, and upcoming events. A panel discussion focusing on contemporary issues discussed the extreme magnitude of current drought conditions and responses, and upcoming challenges for the Colorado River Basin, including future demands, climate change, conservation, salinity control and forest health. A half-day Workshop on ‘Communications for SCADA’ was also organized.



USCID organized its Eighth International Conference on Irrigation and Drainage titled ‘Sustainable Basin Water Demand Management - Challenges of Supply and Demand Management at the Basin Scale’ from 2-5 June 2015 at Reno, Nevada, USA. The Conference brought together professionals and experts from water sector, agricultural producers, irrigation and drainage specialists, consultants and academics considered governance, policy, management, financing and technical issues related to regional, sustainable, water management. Co-chairs of a Planning Committee, and 18 USCID members were present during the conference. Mr. Brian T. Wahlin (USA) has taken over as the new President of the (USCID).

Uzbekistan National Committee

The Uzbekistan National Committee on Irrigation and Drainage (UzNCID) publishes a quarterly magazine on ‘Irrigation and Drainage’ edited by the Tashkent Institute of Irrigation and Drainage, administered under the Ministry of Agriculture and Water Resources. The magazine covers information such as scientific researches on irrigation and drainage, the efficient management of water resources and adoption of water saving technologies, improvement of ameliorative conditions of lands, development of Water Users’ Association and other such topic.

Mr. Ilhom Miliyev attended the Symposium on Water Issues and Climate Change from 19-21 November 2015 organized by the France Fulbright Association.



Direct Members

The United Nations Conference on Sustainable Development Rio+20 has supported national regulatory and policy frameworks that enable business and industry to advance sustainable development initiatives, including the important tool of public-private partnerships. With a view to broaden its membership, ICID, for the past three years accepts private companies, institutions and individuals involved in activities related to irrigation, drainage, and flood management as 'direct members' thereby broadening the stakeholder spectrum.

Presently, ICID Direct Membership consists of: **Companies** - (1) WAPCOS Limited, India; and (2) Jain Irrigation Systems Ltd. (India); **Institutions** - (1) India Water Foundation (IWF), India; and **Individuals** – Er. M. Gopalakrishnan (India); (2) Mr. Y. Abdul Basheer (India); (3) Mr. Naty Barak (Israel); (4) Md. Samiul Ahsan Talucder (Bangladesh); (5) Aytekin Turgay (Turkey); and (6) Prof. P.K. Bordoloi (India).

WAPCOS Ltd., India

WAPCOS Limited is a "MINI RATNA-I" Public Sector Enterprise under the aegis of the Union Ministry of Water Resources, Ganga Rejuvenation & River Development. WAPCOS has been providing consultancy services in all facets of Water Resources, Power and Infrastructure Sectors in India and Abroad. The quality management systems of WAPCOS comply with the Quality Assurance requirements of ISO 9001:2008 for Consultancy Services in Water Resources, Power and Infrastructure Development Projects. Company's Vision is "To be a Premier Consultancy Organization recognized as a Brand in Water, Power and Infrastructure Development for Total Project Solutions in India and Abroad".



WAPCOS specializes in various fields like Irrigation and Drainage, Flood Control and Land Reclamation, River Management, Dams, Reservoir Engineering and Barrages, Integrated Agriculture Development, Watershed Management, Hydropower and Thermal Power Generation, Power Transmission and Distribution, Rural Electrification, Ground Water Exploration, Minor Irrigation, Water Supply and Sanitation (Rural and Urban), Environmental Engineering including Environmental Impact Assessment and Environmental Audit, Ports and Harbours and Inland Waterways, Roads & Bridges, Rain Water Harvesting, Ghats Development, Survey & Investigations, System Studies & Information Technology, City Development Plans, Financial Management Systems, Quality Control and Construction Supervision, Roads & Bridges. The Company provides concept to commissioning services for the developmental projects in India and Abroad.

WAPCOS is registered with various international funding agencies for participating in the funded projects like World Bank, Asian Development Bank, African Development Bank, Japan Bank for International Cooperation and United Nations Office for Project Services. Apart from India, WAPCOS has successfully completed consultancy assignments abroad along with some on-going assignments and is currently engaged in providing consultancy services in 41 countries across the world.

WAPCOS actively contributes to various workbodies of ICID by nominating their experts, which includes: Dr. Rajinder Kumar Gupta, Chairman-cum-Managing Director, as Member of WG-IDSST, and ASRWG; Mr. R.K. Agarwal, Member of WG-CAFM; Mr. C.P. Arora, Member of C-PR&P; and Ms. Pooja Kapoor, Member of WG-YPF.

Jain Irrigation Systems Ltd. (JISL), India

JISL is an Indian multinational company with manufacturing plants in 29 locations across the globe. It is an integrated player in global food systems and leads in manufacturing of Micro Irrigation Systems, Plastic Pipes and Products, Agro Processed Products, Renewable Energy solutions, Tissue Culture Plants, Financial Services and other agricultural inputs since several decades. Globally, the manufacturing is housed in Israel, Spain, Turkey, USA, Switzerland, Peru and Brazil. JISL has pioneered a revolution with modern irrigation systems and innovative technologies using cutting edge research and development in order to save precious water and to get significant increase



in crop yields using global agronomical knowledge for millions of farmers. It has also ushered in the new concept of large scale Integrated Irrigation Projects. "More Crop per Drop" is the company's approach to water security and food security.

ICID team led by Er. Avinash C. Tyagi, Secretary General visited facilities of JISL located at Jalgaon (India) and had discussion with the senior management officials and invited to share their experience with other stakeholders within India and globally by participating in the activities of ICID. As a result of discussions, both parties agreed to explore areas of mutual cooperation which may include capacity development initiatives in the Africa region, setting up of a Centre for Capacity Development and Training in Africa with the support of IFC (WB Group), possibility of taking up inclusive and sustainable pilot project for integrated agriculture value chain development in the African region, development of guidelines for piped canal irrigation system, development of e-Learning modules on micro irrigation systems, support for organisation of 9th Micro Irrigation Conference etc.

The founder Chairman, Bhavarlal Hiralal Jain, 'Bhau' who shaped the multi-national company, passed away on 25 February 2016 leaving a vacuum in the irrigation and drainage sector. Bhau was a strong supporter of the objectives of ICID.

The University of Nebraska, globally renowned for quality education and research, and the Robert B. Daugherty Water for Food Institute honoured the founder of JISL, Late Bhavarlalji (Bhau) Jain for his lifetime achievement by naming their research project as "Bhavarlal Hiralal Jain- University of Nebraska Water for Food Collaborative Program".



India Water Foundation (IWF), India

India Water Foundation (IWF) is a non-profit civil society, having its headquarters at New Delhi (India). It is engaged in generating heightened awareness public awareness about water and environment related issues in Asia-Pacific region, regarding the vital role water and environment play in human lives, their impact on health, economic growth, livelihoods of the people.



While welcoming the Agreement on Climate Change reached at Paris in December 2015, IWF has been advocating eco-system based adaptation to climate change and judicious management of water, energy and other natural resources. It has been making efforts to get the major components of the SDGs and Paris Agreement integrated into national policies in the Asia-Pacific region in general and India in particular.

Presentation by IWF on "Ecosystem Based Adaptation: Sustainable Water Use in Urban Areas" at SIWI World Water Week 2015 in Stockholm, Sweden on 23-28 August, 2015, apart from evoking positive responses, also spurred other participants and institutions to focus added attention on eco-based adaptation system.



IWF participated in a panel discussion on the occasion of 66th ICID Foundation Day held on June 24, 2015 and stressed the need of water conservation for sustainably increased agricultural productivity to support equitable increases in farm incomes, food security and development. IWF is a Key Resource Centre under Ministry of Drinking Water and Sanitation (MDWS) since March 2015, and has conducted successfully many training programmes.

Individual Members

Direct individual members also contributes to the objective of the Commission by participating in various events organized by ICID and its partners. Individual members are also encouraged to participate in ICID activities by joining workbodies of their interest.

Dr. Prashanta Kumar Bordoloi, Professor and Head of Department (Civil Engineering), School of Engineering and Technology of Kaziranga University was selected as a speaker at International Conference on Environmental Science and Technology 2016, based on the abstract entitled "Sustainable River bank Erosion Management by Soft Engineering Approach: A Case Study of the Brahmaputra". He was also selected as a speaker for the ARCID4 to be organised by ENCID for his abstract entitled "Agricultural Land and Water Management for Sustainability under Climate Variability".



International Partners

UN encourages the international community to strengthen global partnerships for Sustainable Development, has invited the academic, research and scientific communities to contribute to the realization of the 2030 Agenda for Sustainable Development, and encourages it to play an important and growing role in filling knowledge gaps and facilitating better understanding of the core principles of the Sustainable Development.

ICID collaborates with all the major international organizations which include: ADB, AWC, FAO, GWP, ICOLD, ICRISAT, IFAD, IFPRI, IWMI, UN-Water, WMO, World Bank, WWC, United Nations University, UNESCO-IHE, UNESCO-IHP, WFO, SARIA, ARID, AARDO, IIT-R, to name a few. Embedded in the following paragraphs, is a brief report on these collaborative activities to further ICID's Vision, Mission and Goals.

UN-Water



ICID is one of the partner organizations of the UN-Water and has been collaborating with them in various global programs in water, particularly in Agricultural Water Management.

ICID National Committees and its member countries extensively celebrated and publicized UN declared days themes which are closely related to ICID's Vision, Mission and Goals such as:

- (i) The World Biodiversity Day on 22nd May on "Biodiversity for Sustainable Development";
- (ii) The World Environment Day (WED) on 5 June on "Seven Billion Dreams. One Planet: Consume with Care";
- (iii) The World Day to Combat Desertification (WDCD) on 17 June on "Attainment of food security for all through sustainable food systems"; and
- (iv) The World Water Day on 22 March on "Water and Jobs".

President Dr. Nairizi participated at the High-Level International Conference on the Implementation of the International Decade for Action "Water for Life" 2005-2015 organized from 9-11 June 2015 at Dushanbe, Republic of Tajikistan with the objectives to summarize and assess the progress in reaching the goals of the Decade and develop further joint recommendations achieving sustainable development of the water resources. UN Secretary-General Ban Ki-Moon and 72 delegations of the UN member States, including high dignitaries like, Prime Minister, Deputy Prime Minister, Foreign Minister, Ministers of Water Resources and Irrigation of the UN member States as well as invited UN-Water members attended the conference. President Dr. Nairizi was the speaker at the 'Roundtable' titled "The Water Energy-Food-Environment Nexus" which had been co-organized by United Nations Economic Commission for Europe (UNECE) and International Water Management Institute (IWMI).



Food and Agriculture Organization

FAO is a permanent observer to ICID's Council meetings and a technical partner in ICID Congresses and World Irrigation Forums and FAO experts participate in ICID technical work bodies. ICID has a special consultative status with FAO and the Commission is participating in various on-going FAO programs, through its NC in the countries in which FAO's programs are continuing or are to be developed. ICID also assists FAO in updating and authenticating water statistics collected from these countries and provide any additional information as may be needed. Dr. Marco Arcieri, Secretary-General, ITALICID currently represents ICID at FAO meetings, including its Council meetings, held in Rome.



At the 7th World Water Forum held in Daegu and Gyeongbuk, South Korea from 13-18 April 2015, ICID together with FAO and other partners successfully organized the Thematic Session 2.1 'Water for Food', which discussed current and potential progress in six key focus areas. Besides, President Dr. Saeed Nairizi participated in a high level panel discussions on "How can we achieve a water and food secure future?"; which was organized by FAO on 14th April 2015 during the Forum.

FAO's initiative of developing a network of reference centres on irrigation modernization, which was designed with their partners including ICID in Nanjing, will be taking off in next year and two of the candidate centres are affiliated with ICID. FAO affirmed that this will be a further opportunity to enhance the partnership between both the organizations in the region. Dr. Olcay Ünver, Deputy Director, Water and Land Division and a number of professionals from FAO are actively involved in the technical and organizational aspects of WIF2 that will be held in November 2016.

International Fund for Agricultural Development

IFAD and ICID has an arrangement of deputing their representatives to each other's Council meeting as Observers. ICID is Permanent Observer to IFAD Council meetings. Dr. Marco Arcieri, Secretary General, ITALICID attended the 39th Session of the Governing Council of IFAD held from 17-18 February 2016 at Rome, Italy. The theme of the Session was "Inclusive Investment - Rural people, state and business in the post-2015 agenda". With the vision to end poverty and hunger by 2030, the Session emphasized the target initiated during its last meeting in 2015.



It is fully recognized that achieving the ambitious development goals hinges on translating the new road map into actual outcomes; mobilizing all partners to scale up action to achieve the vision. Therefore, the development efforts must be made more inclusive, reaching further to improve the lives of poor and marginalized groups living in neglected rural areas.

IFAD has been a partner in ICID's World Irrigation Forums since its inception in 2013 and currently contributing to the successful organization of WIF2 as a member of its ITAC.

World Meteorological Organization

WMO as one of the partners of ICID brings together climate and water communities to manage the extreme events like floods and droughts. ICID has a consultative status with WMO while WMO is represented in ICID's technical WGs of interest to it.



The Second Climate Services Users' Forum held from 22-23 April 2015 at Dhaka, Bangladesh in conjunction with the Sixth Session of South Asian Climate Outlook Forum (SASCOF-6) was organized jointly by ICID and WMO, bringing together water managers from the South Asian countries to give them the required exposure on how the seasonal climate outlook could be effectively used in water management operations, particularly during extreme events such as floods and droughts. ICID member NCs of Afghanistan, Bangladesh, India, Myanmar, Nepal, Pakistan and Sri Lanka participated in the Forum.

Experts from WMO conducted a Training Workshop on "Integrated Flood Management: from theory to practice" during the 66th IEC meeting in Montpellier, October 2015. Besides, WMO also sponsored

a number of young participants from ICID NCs belonging to developing countries to the Workshops.

Secretary General Avinash C. Tyagi attended and contributed at the Regional Consultation on Climate Services for the Third Pole and other High Mountain Regions which was organized by WMO at Jaipur, Rajasthan, India in March 2016. Secretary General had held bilateral discussions with Prof. Petteri Talaas, Secretary General of WMO during his visit to New Delhi on 6 March 2016 on matters where ICID and WMO can further work together.



UNESCO

UNESCO-IHE Institute for water and Education and ICID have been collaborating to derive specialized educational solutions from the UNESCO-IHE experts to the needs of diverse clients from the professional water arena represented by ICID. ICID-UNESCO-IHE collaboration has significant value to ICID's young irrigation professionals. Vice President Prof. Charlotte de Fraiture continues to liaison between the two organizations and is a core member of the Consultative Group on ICID's Vision 2030. ICID Secretary General Avinash C. Tyagi represents the Governing Board of UNESCO-IH as a member since 2013. He attended the 15th GB meeting in June 2015 and also contributed to the 16th GB in November 2015.



UNESCO-IHP, as member of WWC has been partnering with ICID in the setting up of World Water System Heritage (WSH) Program in association with the World Water Council. UNESCO-IHP representatives are serving in the International Committee (IC) for WSH and Technical Advisory Committee (TAC) of WSH Program.

World Water Council

ICID has been a founder member of WWC and served its Board of Governors (BoG) during 2013-15. President Dr. Saeed Nairizi and Secretary General attended the 54th BoG meetings of WWC held in Gyeongju, Korea, in April 2015; 55th BoG meeting in Hangzhou, China, in July 2015 and 56th BoG meeting in Marseille, France, in November 2015.



ICID in partnership with other WWC members has initiated the establishment of a World Water System Heritage (WSH) Program, as a member-driven initiative, which is expected to be launched during the 20th Anniversary of WWC in November 2016. Secretary General Avinash C. Tyagi, Dr. Kazumi Yamaoka of JNCID and Mr. Ali Reza Salamat of IRNCID attended the 58th BoG meeting of WWC held in Jodhpur, India from 17-18 March 2016 where WWC BoG approved in principle the establishment of a 'Centre for WSH' and accepted the offer of ICID to undertake the responsibility as Secretariat of WSH that hosts the Centre for WSH.

International Water Management Institute

ICID and IWMI have been collaborating on issues of common interest and IWMI was one of the major partners in ICID's annual meetings, WIFs, Congresses, besides regional activities like CSUFs organized with the support of WMO. Both the organizations participate in each other's key events. IWMI is represented in various technical work bodies of ICID as a permanent observer. IWMI has agreed to be a technical partner to WIF2 and contributing effectively in its organization since then by being a member of ITAC of WIF2, etc.



ICID supported the 'Interactive Workshop on the South Asia Drought Monitoring Systems (SADMS) jointly organized by IWMI and GWP-SAS and Secretary General Avinash C. Tyagi Chaired the Technical Session on 'Overview of Drought Programme and SADMS Programme' held in Dhaka, Bangladesh on 20 April 2015. Vice President Ian Makin (Lead Specialist - Revitalizing Irrigation) continues to liaison between the two organizations and is a core member of the Consultative Group on ICID's Vision 2030.

Asian Development Bank

Asian Development Bank (ADB) is one of the technical partner organizations of WIF and has recently become one of the Direct Members of ICID.

ICID and ADB partnered in a session on 'Water and Food Security' coordinated by FAO during WWF7 in April 2015. In the concluding of thematic session 4.1 on 'Economics and Financing for Innovative Investments', coordinated by ADB at WWF7, ICID Vice President H.E. Basuki Hadimoeljono, Minister of Public Works and Housing, Indonesia, delivered the Keynote Speech, amply reflecting ICID's perceptions on the topic.



ADB's Asian Irrigation Forum inspired ICID to conceptualize the WIF and both Forums are held triennially. ICID has actively participated and contributed to the 2nd Asian Irrigation Forum (AIF2) held in Manila in January 2016 where ICID President Dr. Narizi made a keynote address during the inaugural session on the topic 'Securing Water and Food for the Future - Role of ICID'.

ADB is actively involved in the organization of WIF2 of ICID in November 2016 as a member of ITAC of WIF2 and also organizing Side Event on the topic related to the theme of WIF2.

Global Water Partnership

Global Water Partnership (GWP) and ICID encourage regional and country water partnerships to link up with ICID NCs wherever possible, thus a stronger GWP-ICID technical collaboration could be evolved. It includes potential joint initiatives for floods, droughts and climate services, and GWP agreed to engage with ICID on relevant drought and flood management activities. GWP is a partner organization of ICID's WIF2 and a member of ITAC of WIF2. ICID also collaborates with GWP under Integrated Drought Management Program (IDMP), being coordinated by WMO. Secretary General Avinash Tyagi is the Regional Council member of GWP-SAS.



International Commission on Large Dams

International Commission on Large Dams (ICOLD) and ICID have been together taking up many issues in global water sector for decades. ICID President Dr. Saeed Nairizi was a speaker at the Session on 'Water Storage Infrastructures for UN Sustainable Development Goals' organized by ICOLD at the 7th WWF in Korea in April 2015. ICID is partnering with ICOLD in the launch of WSH Program of ICID, a member-driver initiative under WWF. ICOLD has been represented by Dr. Emmanuel Grenier at the first Preparatory Meeting of IC of WSH Program held on 16 March 2016 as an Observer and agreed to be a member of TAC of WSH. ICID Secretary General also held bilateral discussions with ICOLD representative for further strengthening the cooperation between the two organizations.



International Society of Paddy and Water Environment Engineers

PAWEES and ASRWG of ICID have been collaborating on various issues of mutual interest and a detailed proposal for furthering the existing collaboration is being prepared by Prof. Watanabe who is also the Chairman of the ICID's Working Group on Climate Change and Agricultural Water Management (WG-CLIMATE).



A three-day PAWEES-INWEPF Joint International Conference on the theme "Solutions for Sustainable Water and Environmental Management" was organized by MANCID jointly with the Malaysian Society of Agricultural Engineers (MSAE) from 19-21 August 2015 at Kula Lumpur. The conference created an interactive platform for paddy and water environment related researchers, scientists, practitioners, policy makers and other professionals. Vice President Ian Makin attended the 12th Steering Meeting and International Network for Water and Environment in the Paddy Field (INWEPF) Symposium 2015 held at Negombo, Sri Lanka from 3-5 November 2015 with a view to explore the areas of cooperation between ICID and INWEPF.

International Crop Research Institute for the Semi-Arid Tropics

ICID and ICRISAT have been collaborating with each other in the areas mutual interest and ICRISAT is an observer in ICID's Working Group on Water and Crops (WG-WATER & CROP). ICRISAT is one of the technical partners of WIF2. ICRISAT Director General is a member of ITAC of WIF2 and PH Prof. Chandra Madramootoo of ICID serves as a member of ICRISAT Board of Governors.



International Council on Monuments and Sites

ICOMOS is a professional association that works for the conservation and protection of cultural heritage places around the world and ICID's recent efforts to recognize Heritage Irrigation Structures (HIS) and the initiative on WSH Program have common goals which will further enhance the cooperation between the two organizations. ICID participated in the Session on 'Fostering Water Heritage, Water Values and Related Cultural Expressions' organized by ICOMOS during the 7th World Water Forum in April 2015. ICOMOS is a member of IC of WSH and ICOMOS was adequately represented at the First Preparatory Meeting of IC held in New Delhi at ICID Central Office on 16 March 2016 through Prof. Henk van Schaik.



International Food Policy Research Institute

ICID has been collaborating with IFPRI on matters of mutual interest either bilaterally or through its NCs. A two-day Conference on 'Water Policy for Security' was held from 5-6 October 2015 at UC, Davis, USA co-hosted by the World Food Center at the University of California and IFPRI with focus on key global water challenges, such as climate change, groundwater depletion, water markets & development and risk, and private investment. The Conference recognized the need to better incorporate water in the agenda of the United Nations Climate Negotiations in Paris, France. It also emphasized the need for shared responsibility for water conservation among farmers, governments, private enterprises and other stakeholders and the need for major policy reforms to more sustainably manage the groundwater resources as a safeguard against future droughts which ICID completely endorses.



African-Asian Rural Development Organization

AARDO is one of the organization set up in 1962 to effect South-South cooperation in the field of agriculture and rural development and is headquartered in New Delhi. It is an autonomous inter-governmental Organization comprising 31 African and Asian country governments as its members. It promotes coordinated efforts, exchange of experiences and cooperative action for furthering the objectives of development of the rural areas. With rural development as a common objective and about 15 members common to both ICID and AARDO, it is but natural that the two organizations better cooperate to serve their members by synergizing their activities.



Secretary General Avinash C. Tyagi attended the 14th Asia Pacific Agricultural Policy Forum (APAP) on the theme "Regional Integration and Public Private Partnership" held from 31st August to 1st September 2015 in Seoul, Republic of Korea which was organized by the Korea FAO Association/ Regional Office of African-Asian Rural Development Organization (AARDO) for Far East, and Global Agriculture Policy Institute.

H.E. Wassfi Hassan El-Sreihin, Secretary General of AARDO and Er. Avinash C. Tyagi, Secretary General emphasised the need to address agriculture policy issues for sustainable rural development and stressed the dire need of aligning the water as well as agriculture policies in an effort to address SDGs.

ICID and AARDO decided to further explore the possible areas of collaboration and undertake joint activities. This resulted in the signing of a MoU between both the organizations on 9 December 2015 in New Delhi at AARDO Headquarters.

Mediterranean Forum on Water Resources'

ICID was represented through VPH Dr. Ragab Ragab and VPH Dr. Lucio Ubertini of ICID and Dr. Marco Arcieri, Secretary General, ITAL-ICID at the Mediterranean Forum on Water Resources' (MRWR) organized by the University of Basilicata Regional Agency for Environmental Protection (ARPA – Basilicata) from 18-22 October 2015 at Matera, Italy. VPH Dr. Ragab Ragab (UK) made a presentation on 'Water and Food Security'; VPH Prof. Lucio Ubertini (Italy) and Chair of UNESCO – Water Resources Management and Culture delivered a talk on the role of 'International Institutions on Cooperation' and Dr. Marco Arcieri addressed the topic 'Large dams and security issues'.



Regional Integrated Multi-Hazard Early Warning System for Africa and Asia

Secretary General Avinash C. Tyagi visited the Office of RIMES in order to promote the capacity building activities and providing actionable warning information towards forearmed, forewarned and resilient communities. RIMES, an international and inter-governmental institution, provides regional early warning services based on climate prediction and builds capacity in its Member States in the end-to-end early warning of tsunami and hydro-meteorological hazards such as floods and droughts. RIMES operates from its regional early warning center located at the campus of the Asian Institute of Technology (AIT), Thailand. Secretary General met Dr. A.R. Subbiah, Director and Dr. G. Srinivasan, Chief Scientist of RIMES on 10 February 2016 and discussed the potential areas of cooperation. After detailed discussion, it was decided to organize a special Side Event during WIF2 to help farmers in understand the early warning system and its advantages.



McGill Institute of Global Food Security

The McGill Institute for Global Food Security hosted and organized its 8th McGill Conference on Global Food Insecurity and Hunger during 27-28 October 2015 at MacDonal Campus, McGill University, and Montreal, Canada on the theme 'Current and Future Challenges for Sustainable Food Security'. Mr. David Bergvinson, Director-General of International Crop Research Institute for the Semi-Arid Tropics (ICRISAT) was the 'Keynote Speaker' on Digital Agriculture. A large number of representatives from government, students, academics, the private sectors, non-governmental agencies and civil society participated. Representing ICID, President Hon. Dr. Chandra A. Madramootoo (Canada) made a Keynote presentation on 'Breaking the Barriers to Food and Water Insecurity'.



Other initiatives

In November 2015, ICID led a fact finding mission on Agricultural Water Management to DPR Korea in collaboration with International Economy and Technology Interchange Association (IETIA), DPRK. Other initiatives that worth mention include the organization of 'India Irrigation Forum' which was beneficial to many regional players in South Asia. ICID also collaborates with a number of international and regional organizations like ICIMOD, NARBO, IWHA, IWA, IWHR, IWRA, Korea Rural Community Corporation (KRC), etc.



Working Groups in Action

Achieving targets under SDG 6 is fundamental for all economic activity and industry. Whatever the sector, from agriculture to IT, adequate and reliable water supplies are needed.

Goal 6: Ensure availability and sustainable management of water and sanitation for all

- 6.1 By 2030, achieve universal and equitable access to safe and affordable drinking water for all

- 6.2 By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations

- 6.3 By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally

- 6.4 By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity

- 6.5 By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate

- 6.6 By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes

- 6.a By 2030, expand international cooperation and capacity-building support to developing countries in water- and sanitation-related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies

- 6.b Support and strengthen the participation of local communities in improving water and sanitation management

Achieving of targets under SDG 6 is fundamental for all economic activity and industry. However, for a “Water secure world free of poverty and hunger through sustainable rural development”, adequate and reliable water supplies are needed in order to:

- Double the agricultural productivity and incomes of small-scale food producers [2.3];
- Ensure sustainable food production systems and implement resilient agricultural practices [2.4];
- Sustain per capita economic growth [8.1] through higher levels of economic productivity [8.2];
- Progressively achieve and sustain income growth of the bottom 30 per cent of the population [10.1]; and
- Reduce the impacts of water-related disasters such as floods and droughts with a focus on protecting the poor and the vulnerable [11.5].

In order to enable water to support these related targets it is essential that

- Substantially reduce waste generation through prevention, reduction, recycling and reuse [12.5];
- People everywhere have information and awareness for sustainable development and lifestyles [12.8]; and
- Conservation, restoration and sustainable use of freshwater ecosystems and their services is ensured [15.1].

The main objectives of ICID is generating, collating and sharing knowledge for fulfilling the mission of “Water secure world free of poverty and hunger through sustainable rural development”, is materialised by the technical WGs, which are clubbed into four strategy themes:

- (i) **On-farm:** Water application techniques related to crops, on-farm irrigation, and use of poor quality water;

- (ii) **Schemes:** Dealing with various aspects of irrigation systems such as, modernization and revitalization, institutional aspects, irrigation development and management, water saving in agriculture and sustainable drainage;
- (iii) **Basin:** Wide planning covering various issues such as drought, floods, environment, climate, tidal areas, bio-energy that effect agriculture water management; and
- (iv) **Knowledge:** Management that includes preserving history of irrigation, capacity development, value engineering, communication and dissemination, publications and conferences.

The WGs through their activities help to generate, extract, compile, and synthesize the available knowledge for wider dissemination through ICID channels. Various WGs and TFs have been established to study these aspects. Experts drawn from a wide range of disciplines like engineering, hydrology, agronomy, environment, sociology, economics, and climate change and so on, working as members, contribute voluntarily and share experiences across geographical, climatological, economic and social spectrum.

Members of WGs are nominated by the NCs. Direct Members also join and contribute as members of these WGs. In addition, observers from various partner organizations also join the deliberations of the WGs. The output of the WGs could be in the form of technical papers, reports, manuals and/ or guidelines. In addition to sharing the technology and innovations at the annual WG meetings, experts share their experiences through technical deliberations at the Congresses and specialized workshops. WGs have also started making use of the Web conferencing tools to deliberate on matters of interest.

The following sections describe briefly the activities of various workbodies during the year 2015-16:

On-Farm

The ultimate aim of irrigation is to achieve increased crop production, through reliable, and sustainable water distribution on irrigated land. However, the management of on-farm water application systems is a very complex problem faced both by the farmers and irrigation managers, which constitute: selection of right crops based on water availability; selecting the most appropriate irrigation techniques for optimal utilization of scarce water resources matching the local context; reduce losses; using certified equipment ensuring a minimum quality for on-field irrigation; recycle and reuse of water including use of poor quality water in case of limited availability of good quality water and so on. In order to discuss these issues, ICID has constituted three WGs, WG-WATER and Crops, WG-CROP, WG-PQW and WG-SON-FARM under theme 'On-Farm'. This three brief activities of these WGs are as follows:



Water and crop

The Working Group on Water and Crops (WG-WATER & CROP), re-established in 2007 with new mandate to promotes the efficient use of water in crop production, study best techniques for rainwater harvesting, promotes the multi-functionality of water use in paddy (rice) cultivation, investigates the adaption of agriculture to climate, and to promote low input agriculture.

WG-Water & Crops is working on a 'Technical Report (TR)' based on the work carried out so far which includes - efficient use of water in crop production, crop water models, multifunctional water use in paddy, rainfall harvesting and energy crops. NCs of Philippines, China and Indonesia have contributed their papers for TR.

An International Workshop on 'Precision Irrigation for Sustainable Crop Production' was held from 13th and 14th October 2015 at Montpellier, France. The workshop focussed on the following topics: (a) Precision irrigation technology for improving water use efficiency; (b) Precision irrigation for poor quality water application, (c) The Economy and National policies of precision irrigation, (d) New

technologies for more accurate determination of crop water requirements for precision irrigation, and (e) Models as management tools for water management under precision irrigation. 25 papers and 6 posters from 14 countries were presented. The outcome of the workshop is available at <http://ppts.icidonline.org/france_2015/france_msg_ws-crop.pdf>. The papers /presentations from the workshop are also available at http://wg-crop.icidonline.org/crop_present.html

Use of poor quality water for irrigation

Supplies of good quality irrigation water is expected to decrease in the future as the development of new water supplies will not keep pace with the increasing water demands from industries, municipalities and agriculture. Thus, irrigated agriculture faces the challenge of using less water, even poorer quality water in some cases, to meet the food and fibre requirement. Some of these future water demands can be met by using available water supplies more efficiently, but in many cases it will be necessary to make increased use of municipal wastewaters and irrigation drainage waters (JD Oster, 1994).



Working Group on Use of Poor Quality Water for Irrigation (WG-PQW), established in 1995, has been promoting safe and good management of poor quality water for irrigation, minimizing the negative impact on human health and the environment, promoting the multiple use of poor quality water, and giving consideration to the institutional and legislative aspects with regard to the use of poor quality waters.

Incorporation of treated waste water reuse in the mainstream water management paradigm is now unanimously recognized and accepted. The reuse of waste water is really a multi-disciplinary approach and covers a wide and diversified situation covering origin and quality of water, filtration or treatment processes, suitable cropping patterns and irrigation techniques etc.

In order to address these issues, the WG in collaboration with the French National Committee organized a Roundtable meeting on “Wastewater Reuse in Agriculture” on 13 October 2015 at Montpellier, France. The WG shared interesting papers during the roundtable meeting. VPH Dr. Samia El Guindy (Egypt), Chairperson made a presentation on Introduction to Wastewater Reuse/ Opportunities, Major Constraints, Reducing Risk and Strategic Approach. Further, in order to enrich the repertoire of the WG, Dr. Anna Tedeschi (Italy) and Dr. Takanori Nagano (Japan) prepared their reports on “Impact of Irrigation by saline water on soil and crop production” and “Impact of tsunami on farmland and the progress of rehabilitation after the great Japan earthquake,” respectively.

Sustainable on-farm irrigation system

While many major investments and activities in the past stopped at the farm level gate, it is increasingly being recognized that substantial resources need to be allocated to develop on-farm irrigation systems to achieve full benefits of new irrigation development and/or modernization of existing systems towards higher agricultural productivity, economic growth and environmental sustainability.

WG-ON-FARM established in 1998, had made sustained efforts to compile the data on areas under drip and sprinkler irrigation in the world. WG is working on finalization of an article on “Improvement of the On-Farm Irrigation Systems Using Simple Water Control Measuring and Application Devices,” and (b) report on ‘Micro irrigation for smallholders and greenhouses’ for its publication in the ICID Journal.

TARGET 2.4

By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality.



In order to promote the use of micro irrigation on large-scale, ICID with the support of WG-ON-FARM and its members is organizing an International Micro Irrigation Conference with the aim of creating awareness among its members about latest developments in Micro irrigation technology to enhance crop production. The WG is supporting the next International Micro Irrigation Conference to be organized by the Indian National Committee (INCSW) in 2019.

After completion of its mandate, the group has reviewed its mandate and re-established as "Working Group on Sustainable On-Farm Irrigation System Development (WG-SON-FARM)" in 2015 with the following revised mandate:

- (a) Design, installation, management and maintenance of on-farm irrigation structures and water distribution system networks;
- (b) Monitoring, investigation and implementation of soil-moisture, technical and management measures for enhancing the water infiltration and retention capacities of soils;
- (c) Optimization through trade-offs among on-farm irrigation technologies, socio-economic and environmental benefits;
- (d) Development, promotion, operation and maintenance of innovative technologies including local institutional arrangements; and
- (e) Ensure scientific development and relevant research is conducted and its results are translated into actionable recommendations.

Schemes

The Strategy Theme "Systems" was reviewed at the 64th IEC Meeting at Mardin, Turkey, 2013 and renamed as "Schemes". Based on these recommendations the WGs are being reorganized.

Irrigation sector is plagued with numerous challenges some of them are limitations on physical expansion of irrigation due to limited water and land resources including fiscal constraint to expansion; competitive use of water from other sectors; deteriorating irrigation infrastructure due to vicious cycle of build-neglect-build leading to poor and unreliable performance of the projects; the weak institutional foundation both at department and farmers level; etc. These issues, if not addressed properly result in inefficient and sub-optimal use of irrigation projects. Keeping the importance of these inter-related factors, five WGs- WG-IDM, WG-IOA, WG-M&R, WG-WATS and WG-SDG have been formed under this theme to discuss and develop strategies to address the above mentioned challenges. Brief activities of these WGs during the year are as follows:



Irrigation development and management

Developing irrigation is undoubtedly essential for meeting the challenge of achieving the target of feeding the planet for the next decades as higher yields are possible with irrigated agriculture as compared to rain-fed agriculture. Moreover, improving rain-fed production with improvements in soil moisture conservation, rainwater harvesting and applications of limited water at key growth stages through supplemental irrigation can also play a big role in sustainable food production. But it may not be possible to achieve increased sustainable food production without proper management of water in irrigation, aiming ultimately at producing more food with less water. Therefore, water management in irrigation is very important and it must deal with quantities withdrawn from natural environment or made available at the end of another usage, and returning to environment or to another usage; but also with the quality of abstracted and returned water. Keeping in view the above, the WG-IDM was established in October 2015 at Montpellier with the following scope:

- assessment of water demand;
- development of water resources and economic scarcity of water;
- social drivers and resistances to development of irrigation and progress in water management;
- water balance approach in irrigation (and other ancillary uses);

- management of multiple water resource (conjunctive use of surface and groundwater)
- management of multi-use water service;
- performance evaluation of irrigation schemes and benchmarking; and
- ways towards cost reduction alongside with performance improvement.

Institutional and organizational aspects of irrigation schemes

It is felt that in future most of the activities in irrigation/drainage will be in the field of modernisation of existing schemes. The topic of institutional and organisational aspects of irrigation/drainage system management is emphasized in the ICID Vision 2030. For most of the schemes, especially in developing and least developed countries, institutional and organisational changes will play an important role in sustainable development of irrigated agriculture. Keeping above points in view, a “Working Group on Institutional and Organizational Aspects of Irrigation/ Drainage System Management (WG-IOA)” was established in 2015 with the scope to investigate, analyze and disseminate information and knowledge on:

- Legal Framework and Organizational Structures of Water User Association for Water Supply Services;
- Participatory Irrigation Management and Irrigation Management Transfer covering; and
- Public Private Partnership, and Mechanism for Cost Recovery covering.

The WG organized its first meeting at Montpellier in October 2015 wherein the Chair VPH Dr. Hafied Gany (Indonesia) presented the overall program of WG for the next six year period covering activities proposed during establishment phase; review of literature and case studies; and study, investigation, and analyses of material of workshop, seminar, symposium and subsequent publications including compilation of relevant materials. WG has planned to conduct its activities through collaborative communication with periodical on-line meetings.

Modernization and revitalization of irrigation schemes

Water scarcity and the resulting need for its efficient use is a global challenge and calls for optimum and efficient use of scarce water especially for agriculture, a major user of water resources. Since there is limited scope of expansion of irrigation due to limitations of land and water resources in most of the countries, it is expected that modernization and revitalization including improving performance of existing schemes will play a crucial role in ensuring food security in future. Keeping in view the importance of modernization of irrigation schemes in light of its role in support of global food production and ensuring food security, the Working Group on Modernization and Revitalization of Irrigation Schemes (WG-M&R) was established in 2015. WG-M&R will investigate, analyze, and disseminate information on new developments and to formulate recommendations with respect to:



- Planning and preparation for modernization and revitalization of irrigation schemes;
- Interaction between modernization, revitalization and required operation and maintenance;
- Cost sharing for modernization, revitalization and required operation and maintenance;
- Institutional and organizational framework required for modernization, revitalization and operation and maintenance;
- Methods and techniques of lining of conveyance and distribution canals;
- Canal control systems with respect to their automation, using internet, mobile communication and remote monitoring in canal operation;
- Modification to improve communication, operational capacities and flexibility in operation and maintenance of systems; and
- Standardization and codes of practice in irrigation systems.

WG-M&R held its first meeting at Montpellier in October 2015 wherein the group elected Vice President Ian Makin (UK) as its Chairman and refined/updated the work plan Considering action points of WWF8. As a part of the activities of WG, Turkish National Committee (TUCID) will be preparing a paper on the status of modernization in countries around the world and will also support development of guidelines for the design and maintenance of low pressure piped networks. During the Second World Irrigation Forum (WIF2), WG is organizing a Side Event on “New Development in Irrigation Modernization Technology” at Chiang Mai, Thailand.

TARGET 8.9

Promote sustainable tourism to create jobs and promote local culture and products.



TARGET 9.1

Facilitate resilient infrastructure, including water transport infrastructure;



Water saving in irrigation

Agriculture accounts for more than 70 percent of all global water withdrawn for consumptive use. Since irrigation water, from its source to the field and finally consumption by crops, passes through many links, including diversion, conveyance, distribution, on-farm irrigation application, soil evaporation and plant transpiration, etc. so, it is essential to understand each link in sufficient detail so that corresponding measures for saving water loss are identified and implemented for each of these links. There are a vast range of techniques and technologies available for minimizing water losses and maximizing water saving in agriculture and efficient use of irrigation water, ranging from simple tubes for field water application to sophisticated canal automation and telemetry. Water saving practices in irrigated agriculture can be categorized as engineering, management, technology, technique, policies and institutional. Keeping the above in view, the Working Group on Water Saving in Irrigated Areas (WG-WATS) was established in October 2015 at Montpellier with the following mandate:



- Water accounting and irrigation auditing (and other ancillary uses);
- Irrigation water measuring devices;
- Assessment of water loss in various components of irrigation systems;
- Various methods and techniques used for water saving in irrigation;
- Policies and strategies for irrigation water saving;
- Charging for Irrigation Services;
- Success stories and best management practices in water saving;
- Tools and processes applied in irrigation water saving;
- Outreach of water saving technologies; and
- WatSave Awards.

Sustainable drainage

Lack of proper drainage systems are adding further stress to scarce water resources and sustainability of irrigation systems. Lack of well-designed drainage system has lead to degradation of both irrigated and rain-fed regions, soil salinization and sodic soil control (in both cases of poor irrigation management and in case of fashioned deficit irrigation). Where the drainage systems do exist, the disposal of drained water and its quality has a number of negative environmental impacts. It was further identified that inadequate planning and a lack of proper maintenance of drainage networks is one of the major challenges. Sustainable drainage management is crucial in the majority

of regions of the World. Drainage is also considered as the means to control soil salinity in irrigated areas of the world without this irrigated agriculture may not be sustainable.

In order to discuss these issues and arrive at sustainable solutions, ICID established the “Working Group on Sustainable Drainage (WG-SDG)” in 2013 with a mandate to promote drainage as part of integrated water resources management; and to promote sustainable approaches for drainage and related projects through a balanced integration of - environmental, economic, and social and cultural aspects. The WG is expected to investigate, analyze and disseminate information and knowledge regarding drainage of irrigated lands in the overall context of Integrated water resource management.

An International Workshop on “Future of drainage under environmental challenges and emerging technologies” was organized by the group on 13 October 2015 at Montpellier wherein 10 interesting papers were presented on the subject related to the treatment of traditional drainage techniques, wetlands, technology, salinity management under deficit irrigation, drainage needs, etc. As part of the WG activity, a document titled “Bio-drainage for Management of Waterlogging and Soil Salinity” has been brought out. The 13th International Drainage Workshop (IDW) on the theme “Drainage and Environmental Sustainability” will be organized from 4-7 March 2017 in Ahwaz City, Iran.

Basin

Implementing targets on reducing pollution, wastewater treatment and reuse [SDG 6.3], sustainable and efficient use of water resources [6.4], integrated management of water resources (IWRM) [6.5] and protection of freshwater ecosystems [6.6] are all mutually interdependent. This demands collaboration across sectors, establishing partnerships of different interest groups and across different institutions responsible for implementing the 2030 Agenda. Therefore, the WGs clustered under the theme Basin address all basin level influences such as: climate change, environmental issues, irrigation in tidal areas, irrigation in water stressed regions, flood management and water for bio-energy described briefly in the following paragraphs.

Climate change

In the next 30 years, food supply and food security will be severely threatened, if little or no action is taken to address issues related to production of food system’s vulnerability to climate change. Negative effects of climate change include the continued rise of global temperatures, changes in precipitation patterns, an increased frequency of extreme events such as droughts, floods and heatwaves, sea-level rise including saline water intrusion, faster melting of glaciers. To provide water for all users and its optimal use, there is no option but to adopt climate smart measures and improve water use efficiency in agriculture by producing more crop per drop of water.



TARGET 13.1

Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries.



While considerable work is being done worldwide on understanding and describing the impacts of climate change on water resource management, its implications on irrigation, drainage and flood management require additional study especially adaptation to climate change and adoption of climate smart agriculture and the Working Group on Global Climate Change and Agricultural Water Management (WG-CLIMATE) established in 2005 is looking into these aspects. WGs is mandated to review the progression of and predictions of Global Climate Change (GCC), to explore and analyze the medium term implications of climate change and variability for irrigation, drainage and flood management, to stimulate discussion and raise awareness of water-related GCC issues within ICID network, and to stimulate discussions at national scale among scientists, policy makers and through the media.

In order to promote and disseminate information regarding adaptation to climate change in agricultural water management, the Second Climate Services User Forums (CSUFs) for Water Sector in South Asia was jointly organized by ICID and WMO at Dhaka, Bangladesh in April 2015, with focus on Extended Range of Flood Forecasting. 20 participants from Bangladesh, Bhutan, India, Maldives, Myanmar, Nepal, Pakistan and Sri Lanka belonging to National Meteorological Services (NMSs), Irrigation Authorities, Water and Sanitation Departments, Agriculture Departments etc. and participants from WMO, ICID, IWMI, Bureau of Meteorology (BoM) of Australia attended the Forum. The Forum helped improve the climate literacy of the water user community to generate opportunities for a better use of climate information services and was useful in continuing dialogue between user agencies and climate service providers.

Since WG completed its mandate in 2015, it was re-established and named as the Working Group on “Climate Change and Agricultural Water Management (WG-CLIMATE)” at the 66th IEC meeting at Montpellier in October 2016 with the following revised mandate:

- To share the information about prediction of the global and regional climate change and climate variability;
- To explore and analyze implications of climate change and climate variability for agricultural water management including irrigation, drainage, and flood control;
- To promote archiving useful information and case studies on climate change for practical use in improved impact assessment and adaptation development;
- To enhance discussion on climate change and water management at national and regional scales among the stakeholders including academician, practitioners, decision makers, media as well as farmers and water users in a region; and
- To join the international dialogue on Climate change and water management.

Environmental issues

Irrigation and drainage systems worldwide interact with complex, dynamic and diverse environments, which include physical, chemical, ecological, climatic, social, human and economic dimensions. The way water in general and water for agriculture in particular is managed, it can harm the environment in a variety of ways: groundwater depletion and pollution; land degradation and contamination; and loss of ecosystem services, biodiversity, and habitats. However, most irrigation and drainage systems also produce a number of goods, services and positive amenities, which benefit local communities and societies at large.



ICID has long been concerned with the adverse environmental impacts of irrigation and has been addressing these issues since 2008 through its Working Group on Environment (WG-ENV). It provides guidance to policy makers, planners, designers, and managers in the irrigation and drainage sector on the environmental aspects of drainage and irrigation systems. Those aspects encompass environmental, social, and economic impacts of agricultural water management, both positive and negative ones. Environmental sustainability is a moving target, which evolves as the complexities of the ‘Nature’ unfold, as new societal challenges emerge.

TARGET 12.4

Environmentally sound management of chemicals and wastes and reduce their release to water and soil.



TARGET 15.1

Conservation, restoration and sustainable use of freshwater ecosystems and their services is ensured.



This year, the WG focused on Ecosystem Services (ES) and organized an International Workshop on 'Ecosystem Services and Multi-Functionality of Irrigation and Drainage Systems' on 13 October 2015 at Montpellier, France; providing a rare opportunity to investigate the relationships between society and irrigation and drainage systems. Dr. Damien Jourdain (France) provided broad perspectives on definitions, possible approaches to environmental issues and challenges and highlighted the issues in ES assessment and valuation. The issue remains to be resolved. Rice and paddy fields were definitely identified as challenging, multifaceted, multi-scale situations, with lots of interactions with ecosystems and society. The draft Technical Report of the group on "Assessing the environmental impacts and the sustainability of irrigation and drainage systems: The potential contribution of Life Cycle Analysis" is under preparation and will be finalized by November 2016.

The WG organized two WebEx meetings during the year to facilitate experience and knowledge sharing and moving forward the agenda of the WG.

The WG completed its mandate in 2015 and based upon the Scoping Document submitted by WG-ENV was re-established at Montpellier with the following mandate:

- Provide guidance to policy makers, planners, designers, and managers in the irrigation and drainage sector on the following environmental aspects of irrigation and drainage systems: (i) physical, (ii) chemical, (iii) ecological, (iv) socio-economic, and (v) cultural;
- Address concerns to the effects on local, regional and global common goods, such as climate, biodiversity and human health; and
- Work towards the management of a sustainable environment, through adapted practices, adequate policies and institutions, maximizing positive and minimizing adverse effects of irrigation and drainage systems.

Irrigated agriculture in tidal areas

The three aims of the sustainable development of tidal areas (SDTA) are: (i) optimal use of land and water resources, (ii) disaster prevention, and (iii) preservation of biodiversity for the present and the future generations. Keeping in view of the aims, the Working Group on Sustainable Development of Tidal Areas (WG-SDTA) was first established in 2001 and renewed its mandate in 2011.



As part of mandate, an Internal Workshop of the WG-SDTA was held on 13 October 2015 at Montpellier, France. The theme of the Workshop was 'Environmental Hazards in Tidal Areas'. Five papers from Chinese Taipei, Japan, Korea, The Netherlands and Indonesia were presented.

These papers are being considered for publishing in the Special Issue of the ICID Journal in 2016 and are available at http://wg-sdta.icidonline.org/sdta_present.html.

To further strengthen the activities, the Group will be organizing an International Short Course titled 'Resilience and Adaptations to Climate Change for Sustainable Management of Tidal Areas' from 1-6 August 2016 at National Cheng Kung University, Taiwan. The Group is expected to conclude its mandate in 2016 and a 'Scoping Document' will also be developed for continuity of the WG with a new mandate and tenure.

Irrigation in water stressed regions

The Working Group on Water Management in Water Stressed Regions (WG-DROUGHT) was established in 2008 to find ways to mitigate the effects of the 'Droughts'. The Group is mandated to capture field experience of the implementation of drought risk management strategies for coping with water scarcity and look at the approaches and strategies for incorporating economic justification for allocation of water for agricultural production, competing with all other uses. WG-DROUGHT is addressing these issues under three separate themes: (1) Drought management strategies in water

stressed / scarce regions; (2) Coping with water scarcity; and (3) Rainfall harvesting and management for sustainable agriculture.

At its 8th meeting held at Montpellier, 2015, Prof. Chang-Chi Cheng (Chinese Taipei) presented a technical paper under Theme 1: Drought Management Strategies in Water Stressed/Scarce Regions; and Mr. Maurice Roos (USA) also presented a description of the current drought situation in California, USA (available at www.icid.org/wg_drought.html). WG is preparing a Technical Report of the Group covering three sub-themes; and a publication on 'Irrigation under Drought and Water Scarcity' which is in its final stage of preparation.

In order to rejuvenate and reorient its objective, the tenure of WG has been extended for one more year i.e. 2016 to develop a scoping document for the new WG focusing on management of ongoing permanent water scarcity, whether caused by natural events or human intervention, rather than on drought.

TARGET 11.5

Reduce the impacts of water-related disasters such as floods and droughts with a focus on protecting the poor and the vulnerable.



Flood management

The floods are common occurrences in human life. While the seasonal floods are useful, in as much as they deliver topsoil and nutrients to farms (such as in Nile River Valley), the floods of higher magnitudes mostly cause destruction with loss of property and lives. There are several factors responsible for such catastrophic floods among which climate change and rising sea levels, deforestation, occupation of floodplains by people and exceptional hydro meteorological phenomena are most common. Keeping the above points in view and to study and suggest approaches to be undertaken for minimising impacts from floods, ICID established the Working Group on Comprehensive Approaches to Flood Management (WG-CAFM) in 1999. The Group is mandated to study the social, political and economic aspects of flood management measures.



WG organised an International Workshop titled 'Non-Structural Adaptions to Flood Management' on 12 October 2015 at Montpellier, France, in which ten papers/posters highlighting the effectiveness and efficiency of non-structural approaches, such as ENSO based climate forecasting, assessment of flood vulnerability, hydraulic modelling for flood risk mitigation, updating reservoir rules curves, real-time reservoir management and diversion of floods, issue of flood insurance for urban and rural areas, were presented and discussed in detail (http://wg-cafm.icidonline.org/cafm_present.html). The Group is in the process of finalisation of the publication titled "Adaptive Flood Risk Management" covering both structural and non-structural aspects of flood management. At its 30th meeting held at Montpellier, 2015, Dr. Takao Masumoto (Japan) and Mr. Mohd Adnan bin Mohd Nor (Malaysia) were elected as Vice-Chairman and Secretary of WG-CAFM.

Water for bio-energy

Water and land are scarce resource in many parts of the world and will come under further stress due to growing competitive demand on water and land for food production and also diversion of scarce resource for bio-fuel production to meet energy challenges. The expansion and intensification of bio-energy production is further adding to the existing challenges on land and water management. Bio-fuel production has significant impacts on food and water resources as well as on environmental and socio-economic aspects both in terms of positive and negative impacts. Therefore, adequate policies and strategies are needed to help in ensuring sustainability and balancing different types of use in the short and long term. Policy for bio-energy need to balance multiple objectives and should

be based on a holistic perspective like the climate-water-food-energy nexus. Keeping these points in view, the Working Group on Water for Bio-Energy and Food (WG-BIO-ENERGY) was established in 2010 with mandate to evolve “ICID’s position on Water for Bio-Energy and Food” taking into consideration the possible conflict between food production and bio-fuel crops in terms of diversion of land and irrigation water to produce bio-fuel crops and non-food-crops including the use of marginal water/soils, recycled water for the production of bio-fuels and so on.

The Group made a synthesized technical report on ‘Water for Bio-Energy’ along with the country papers received from Brazil, Canada, China, India, Nepal and South Africa. WG in its Report concluded that bio-fuels have an important role to play in meeting the worlds energy needs but it should not be at the cost of food security. The WG completed its mandate in 2015 and developed a new ‘Scoping Document (SD)’ for a new WG. The revised SD of WG-BIO-ENERGY will be discussed during 67th IEC meeting in Chiang Mai, Thailand in November 2016.

Knowledge

Knowledge is very crucial for successful and sustainable development initiatives, but the way knowledge is collected, organized, communicated and shared needs to be given due attention for achieving mission and vision of the organization as well as providing the international community with impartial information and knowledge. An effective knowledge management program that goes beyond collecting, producing and disseminating information is very important for outreach and making an impact on the intended audiences. Keeping in view of need, sharing of knowledge and experience including use of latest and new techniques and capacity development of young as well as in-service professionals of agriculture water management sectors including sharing of learnings from our historical irrigation systems, ICID organized number of working groups/task forces under the theme knowledge such as WG-CDTE, WG-HIST, TF-VE, TF-WWF7, and IYPeF. Brief activities of these WGs/TFs during the year are as follows:

TARGET 17.9

Enhance international support for implementing effective and targeted capacity-building in developing countries to support national plans to implement all the sustainable development goals, including through North-South, South-South and triangular cooperation.



Capacity development

There is a consensus among policy-makers in the developing world that lack of capacity is a major constraint in the development of irrigated agriculture. Although, this concern is not new, it is now receiving much attention in the irrigation and drainage world, where it is becoming an issue in its own right due to the increasing complexities of development, multi-disciplinary nature of solution for sustainable solutions, the close linkages between water-food-energy-ecology, impacts of climate change, rapid changes in the irrigation and drainage sector and the need to bring together various stakeholders who might not necessarily be experts.



Keeping in view the need of capacity building, education and awareness of technical staff working in the field of agriculture water management as well as other stakeholders a new Working Group on Capacity Development, Training and Education (WG-CDTE) was set up at Montpellier with the following mandate:

- Coordinate and guide the knowledge management activities of the Commission and the capacity development activities by various WGs;
- Compile the status of training and educational programmes offered in different regions;

- Compile the Educational Programs being offered in Irrigation and Drainage in different regions;
- Identify the training and education requirements, and identify gaps in available training programs, explore the feasibility of developing e-learning program and prepare guidelines for their development to support education and training programmes;
- Explore the scope of use of IT in capacity development including distant learning, and implement where feasible;
- Make available various tools required for sustainable development;
- Oversee the establishment and functioning of a Technical Support Unit for supporting NCs; and
- Facilitate the process of balancing education and training requirements, and provision and training services.

In line with above mandate, a training programme on “On-Farm Water Use and Management” is being organized at Cairo from 17-25 April 2016 during the 4th African Regional Conference on Irrigation and Drainage (ARCID4) for the participants from Africa. The training programme is being organized by the Regional Centre for Training and Water Studies, Egypt on behalf of ICID and ENCID.

History of irrigation

ICID has been working on the history of irrigation and drainage for the last 30 years through its Working Group on History and has associated experts on the subject from around the world through its National Committees. The Working Group on History of Irrigation, Drainage and Flood Control (WG-HIST) was established with a view to motivate ICID National Committees to set up their national working groups on history and provide guidance to compile, publish, update and/or translate documents on history of irrigation, drainage, flood management, and river engineering. A Workshop on “History of water crisis, old and recent issues” was organized on 13 October 2015 at Montpellier, France wherein about 60 professionals participated and a good number of papers and presentations were made. The group is also planning to finalize a publication titled “Historical Water Sustainability” by the year 2016. As a result of cooperation with the Dutch Rijkswaterstaat and the U.S. Army Corps of Engineers, a book titled “Two Centuries of Experience in Water Resources Management - A Dutch-U.S. Retrospective” edited by John Lonquest, Bert Toussaint, Joe Manous Jr., and Maurits Ertsen was brought out and circulated among the members.

This group has also initiated program for recognition of Historical Irrigation Structures (HIS) by maintaining an online ‘ICID Register of Heritage Irrigation Structures’ on ICID website. A total 25 structures have been included in this Register, which can be accessed at: http://www.icid.org/icid_his1.php. To highlight this program, a Side event on "History of Irrigation and Drainage around the World" will be organized during WIF2 in November 2016 at Chiang Mai, Thailand.

A World Water Heritage System (WSH) program is being promoted in collaboration with WWC to recognize the wisdom of humanity which is worth protecting and preserving as heritage and has an ability to lead us towards a better water management.

Value engineering in irrigation and drainage

Value Engineering (VE) is an intensive, interdisciplinary problem solving activity that focuses on improving the value of the functions that are required to accomplish the goal or objective of any product, process, service, project or organization. Keeping this in view, the Task Force on Value Engineering (TF-VE) was established in 2012 to promote the application of Value Methodology (Value Engineering, Value Analysis, Value Planning, Value Management and Value Engineering Change Proposal) in irrigation, drainage and flood management projects to increase benefits, reduce cost and ensure sustainable irrigated agriculture.

During Montpellier (2015) meeting, Chairman Dr. Kamran Emami (Iran) made a brief report of TF-VE where he focused on application of VE by US Army Corp of Engineers projects and emphasized that

it was emphasised that the potential of saving in irrigation and flood management projects can be in range of 10 to 30 per cent, especially in developing countries.

TF-VE organized an Internal Workshop on 'Value Methodology for Enhancing Large Project' on 14 October 2015 at Montpellier, France where presentations on VE Application in Water Engineering, Value Engineering, Creative Synergy and the Challenges of the Third Millennium and Trend of VE in Japan were made by members of TF (http://www.icid.org/tf_ve.html). TF-VE will be organizing an internal workshop titled "Application of Value Engineering for Saving in Irrigation and Flood Projects" during the 67th IEC meeting in November 2016 at Chiang Mai, Thailand.

TF-WWF7

To lead inputs from ICID to the Seventh World Water Forum (WWF7), a Task Force was established to Guide ICID Inputs to 7th World Water Forum (TF-WWF7) in 2012. TF liaised with NCs for required inputs for active participation in various themes of WWF7 that are of direct relevance to ICID. Chairman VPH Shinsuke Ota presented a brief report of the sessions under the 'Theme Water and Food' at the 7th World Water Forum (WWF7), focusing on the session 2.1.3 'Modernization of irrigation/drainage schemes for food security, rural prosperity and poverty alleviation'. ICID contributions to WWF7 were:



- Coordination of and input to Session 2.1.3 Modernization of irrigation/drainage schemes for food security, rural prosperity and poverty alleviation;
- Participation in the concluding session of 2.1 Water for food by conveying ICID messages including commitment about ICID actions set in IR;
- Participation in the sessions and events mentioned under Item 1.3 by making presentations and taking part in the discussions; and
- Organization of the poster session aiming at gaining publicity for ICID activities. National Committees of Canada, China, France, India, Iran, Japan, Korea, Mali, Spain, Thailand, Turkey presented their posters covering topics related to agriculture water management, modernization of irrigation system, climate change etc.

VPH Ota submitted his report summarizing the extensive ICID participation in the WWF7 and presented the Implementation Roadmap (IR) for ICID describing activities to follow. During Montpellier meeting, TF has been closed.

Facilitating participation of young professionals

Number of young professionals joining the water sector is dwindling very fast and poses a challenge to the management of irrigation systems in future. Despite the challenging developmental scenario, the sector suffers from a lack of interest as the young professionals find the career in the sector un-interesting with little growth potential. The generation next needs to be attracted by making careers in irrigation and drainage sector more interesting and challenging. Information has to be made available to them at a click of the mouse, which they are used to in the era of social media and mobile apps.



The Young Professionals (YP) entering or desirous of entering the irrigation and drainage sector need to be exposed to the opportunities and challenges that the sector faces. Given the complexity of developmental process, young professionals, besides engineering, need exposure to the social, environmental and other disciplinary influences on agricultural water management. In addition to learning from past experiences, what definitely is required under the increasing complexities of supply, demand and uncertainties, young

professionals approach the irrigation and drainage issues with a more open mind and are willing to undertake activities with a multi-disciplinary approach.

In 2015, fourteen young professionals from NCs and partner International Organizations (IOs) were awarded full scholarship for participating in the 26th European Regional Conference and 66th International Executive Council Meeting in October 2015 at Montpellier, France. Besides their active participation as rapporteurs in various sessions of the Conference and attending ICID Working Group meetings, two half-day training workshops were also organized for YPs on the topics:

- “Coupling innovative methods for participatory water management” by Nils Ferrand, IRSTEA;
- “Integrated Flood Management: from theory to practice” by Mr. Giacomo Teruggi, WMO.

WG-YPF was converted into ICID-YPF to broaden the platform and bring together all YPs on single platform, ICID-YPF has introduced and launched as ICID Young Professional e-Forum (IYPeF) as a LinkedIn group (<https://www.linkedin.com/groups/6990321>). Members of the IYPeF would have the opportunity to interact with each other through IYPeF moderated by invited experts. IYPeF also provides an opportunity to young professionals to engage, network and share their experiences and also learn from the experiences of senior engineers (Mentors) in the field. The active members of IYPeF would be provided opportunity to join ICID events and interact face-to-face. The activities of the IYPeF will be monitored and overseen by a group of volunteer young professionals – one coordinator and five joint coordinators - that will link IYPeF with ICID network.



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VPH Laurie C. Tollefson
Permanent Finance Committee (PFC)



Dr. Sylvester Mpandeli
African Regional Working Group
(AFRWG)



VPH Felix B. Reinders
Permanent Committee for Technical
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Working Group on Sustainable On-
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(WG-SON-FARM)



VPH Dr. Karim Shiati
Asian Regional Working Group
(ASRWG)



PH Prof. Em. Bart Schultz
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VP Mr. Ian Makin
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Group (ERWG)
Working Group on Modernization
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Schemes (WG-M&R)



VPH Larry D. Stephens
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Committee on Congresses/
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Dr. Kamran Emami
WG on History of Irrigation, Drainage
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TF on Value Engineering (TF-VE)
WG on Comprehensive Approaches to
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ICID Young Irrigation
Professionals Forum (ICID-YPF)



VP Dr. Abdelhafid DEBBARH
Working Group on Capacity
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ICID Workbody Chairpersons



PH Prof. Chandra Madramootoo
TF to Guide ICID Inputs to World
Water Forum 8 (TF-WWF8)



Mr. Bernard Vincent
Working Group on Sustainable
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Irrigated Areas (WG-WATS)



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Regions (WG-DROUGHT)



VPH Dr. Samia El- Guindy
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Quality Water for Irrigation (WG-
PQW)



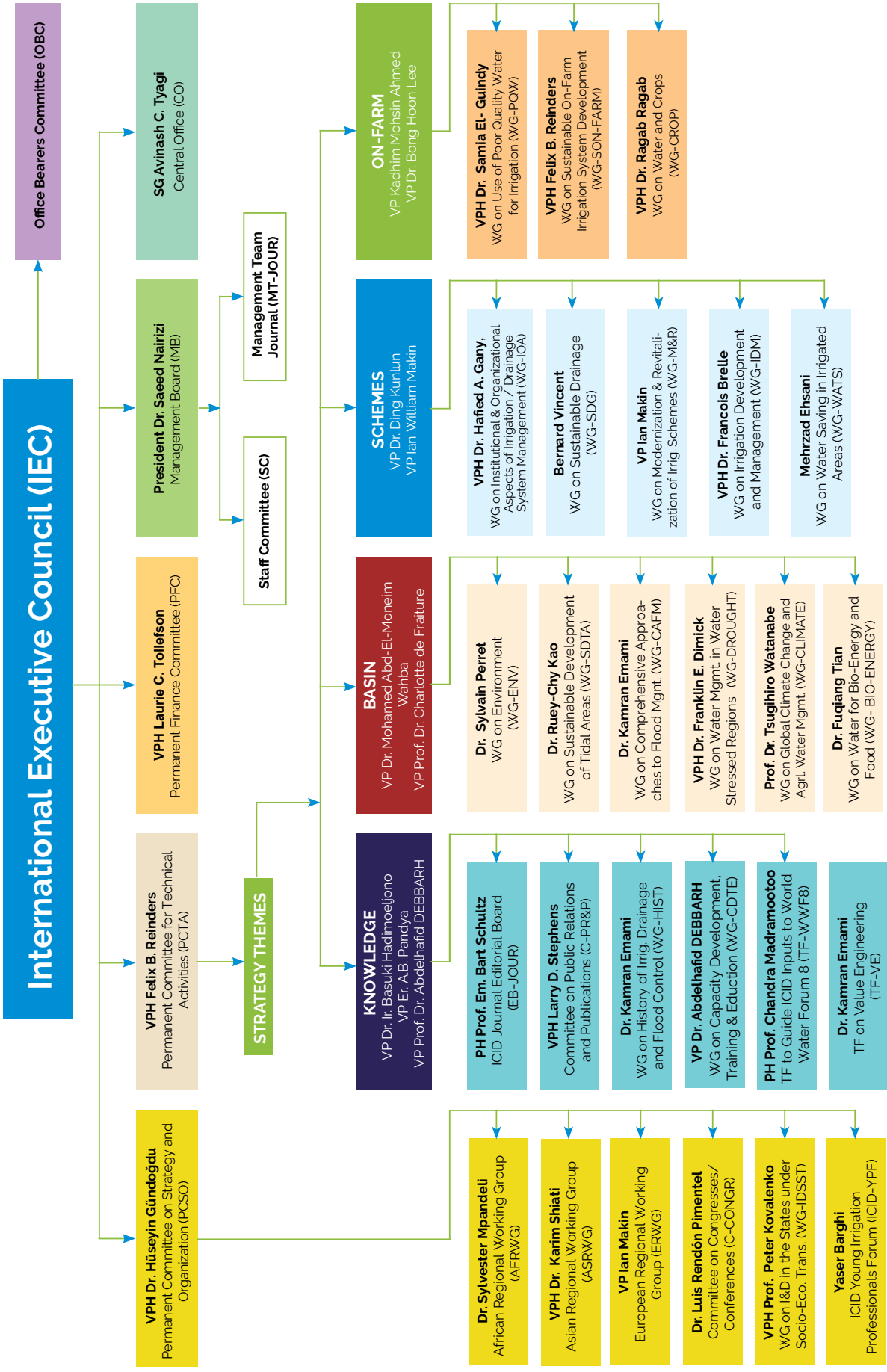
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Irrigation / Drainage System
Management (WG-IOA)



WG: Working Group, TF: Task force, PH: President Hon., VP: Vice President, VPH: Vice President Hon.

Online WebEx Meeting of the Working Groups

(Video Conferencing)

In the era of information technology, WebEx Meetings or Video Conferencing are great ways to communicate and keep in contact. During the 65th International Executive Council (IEC) meeting held on 20 September 2014 at Gwangju, Republic of Korea, it was decided that the Working Groups should organize a WebEx Meeting or a video-conference in between two face-to-face meetings at the IEC in order to enable the Group to take a review of the progress made on their activities and at the same time allow contribution from those members who are unable to attend the meetings.

Basic requirement for joining Central Office organized Video Conference / WebEx online meetings are: (a) Computer with microphone; (b) Internet connection and Webcam for video steaming (optional) and that is all. A notebook computer / Tab contains all these required features. The online feature helps to meet anyone/ everyone, anywhere, in real time. The software combines desktop sharing through a web browser with phone conferencing and video.

As per the requests received from the Wokbody Chairs, Vice-Chairs and Secretaries, WebEx meetings/Video Conferences were organised by the Central Office, which includes: WG-ENV on 17 September 2016; WG-YPF on 29 September 2015; Meeting with WIF2 organizing team on 2 February 2016; 1st Meeting with 23rd Congress Organizing Team on 11 March 2016. In addition Virtual Management Board Meeting, the Consultative Group Vision 2030 and other meetings with partners were also organized.



Activities at Regional Level

Presently, three regions have active working group's viz., Africa, Asia, and Europe. The activities of these WGs and interaction with other regional groupings/ gatherings are presented in this chapter that supports regional cooperation.

African Regional Working Group (AFRWG)

In Africa, agriculture accounts for 65% of employment and 35% of Gross Domestic Product (GDP), but poverty remains high in rural areas where most of the population depends on agriculture to make a living. To achieve the Sustainable Development Goals (SDGs) of eliminating hunger and poverty, African countries need to prioritize agriculture and rural development in their development agenda. Every alternate year, the African Green Revolution Forum (AGRF) has been organizing a meeting of the African heads of states to work towards an African Green Revolution. The Forum focuses on promoting investments and policy support for driving agricultural productivity and income growth for African farmers but has lacked the focus on agriculture water management. Unfortunately, only 3% of the arable land in Africa has assured irrigation.

AFRWG which has a membership base of 15 countries is trying to address these issues. The group deliberated on efforts made by the regional member countries to encourage non-member regional African countries to become member of ICID and the WG. VPH Dr. Backeberg stressed that Southern African Regional Irrigation Association (SARIA) has six countries that have already joined ICID while nine countries are still to become members and Uganda is in the process of joining ICID as a Member.

Realizing the lack of technical capacity at various levels, AFRWG has been working on developing a Capacity Development Strategy for Africa. During the Montpellier (2015) meeting, under the leadership of Dr. Sylvester Mpandeli, Chair of AFRWG adopted the Strategy for Capacity Building in Africa as a living document to be reviewed every three years. First training course on 'On-farm water use and management' is being organized in Cairo, Egypt from 17-25 April 2016, preceded by the 4th African Regional Conference on Irrigation and Drainage (ARCID4) from 26-28 April 2016 in Aswan City, Egypt.

ENCID has been making efforts to facilitate a meeting of the member countries of the North African Region and undertake the process of developing a Memorandum of Understanding (MoU) with all the North African countries and hold elections to decide on the Chairmanship and location of the office.

SARIA Workshop and Steering Committee Meeting, Malawi

The Southern African Regional Irrigation Association (SARIA) successfully organized its Annual Workshop from 16-18 February 2016 at Lilongwe, Malawi on the theme "Rural fresh aquaculture." Representatives from SARIA member countries, namely Malawi, Zimbabwe, Lesotho, Botswana, Madagascar, Swaziland, Congo, Zambia and South Africa and the representative from Food and Agriculture Organisation (FAO) participated in the Workshop. The Hon'ble Minister of the Department of Agriculture and Irrigation from Malawi welcomed the delegates and shared his perspective and vision about the Southern African Development Community (SADC) activity with the participants. He highlighted the willingness of the Malawian Government to support SARIA activities and shared a brief situation overview on the experiences and challenges faced by the irrigated sector in Malawi.



During the workshop, three sessions, namely (i) Training; (ii) Site visit to the Fish Farm and Lake in Malawi; and (iii) Steering Committee meeting were held. A site visit to Fish Farm on second day, delegates observed the practicality of the fish/ irrigated crops integration process and witnessed whole process of fish hatchery, changing of oxygen, fish feeding, water circulation and its release into the crops field. The issues around water quality, marketing and sustainability of fish production were also discussed in detail.

During Steering Committee meeting on third day, the member shared experiences on all irrigation activities and the challenges encountered, and solutions adopted. Members also discussed the issue of the sustainability of SARIA as most of the countries finding it difficult to sustain the payment of their membership and travel arrangements, as a result they have to depend on the sponsorship from the Department of Agriculture, Forestry and Fisheries (DAFF) of South Africa.

TARGET 15.9

By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts.



Asian Regional Working Group

VPH Dr. Ir. Karim Shiati (Iran), Chairman of the Asian Regional Working Group (ASRWG) visited Tanzania and met Eng. Mbogo Futakamba (Tanzania), Permanent Secretary of Ministry of Water of the U.R. of Tanzania on 1 October 2015 in Dar-es-Salaam. The meeting encouraged active participation and contribution of TANCID in the activities of ICID.



During the Montpellier meeting, the group appreciated the keynote address made by Dr. Sang Mu Lee, Chairman of the Korea Rural Community Corporation (KRC) which was enthusiastically received by the WG. VPH Ota appraised the WG on the contribution of ASRWG to WWF7 and also requested the active participation of ASRWG in WWF8. The group appreciated all the efforts and contributions made by VPH Ota for his untiring efforts for his contributions to the successful participation in the WWF7. The Iranian National Committee (IRNCID) will be organizing the 13th International Drainage Workshop (IDW) from 4-7 March 2017 in Ahwaz, Iran.

In order to explore and expand possibility of regional cooperation among relevant countries, IRNCID proposes to organize a 'Ministerial Level Meeting for Regional Cooperation on Water and Food Challenges' during the 13th IDW. In addition to the Ministerial level meeting, IRNCID is also planning to organize a number of other related side events with the support and collaboration of international and national partners. The 8th Asian Regional Conference is proposed to be organized in Nepal in 2018 while 9th International Micro Irrigation Conference (IMIC) will be organized in India in 2019/2020.

INWEPF Symposium 2015, Sri Lanka

The 12th Steering meeting and International Network for Water and Environment in the Paddy Field (INWEPF) Symposium 2015 was organized from 3-5 November 2015 at Negombo, Sri Lanka. The event was organized in collaboration with the Ministry of Irrigation and Water Resources Management, Ministry of Mahaweli Development and Environment and Ministry of Agriculture. The aim of the Symposium was to create a platform for professionals from the irrigated agriculture sector who play significant multiple roles in improving land and water productivity as well as protecting the related ecosystems. H.E. Vijith Wijeyamuni Soysa, Minister of Irrigation and Water Resources Management in Sri Lanka, was the Chief Guest at



the Inaugural Session. The symposium gathered around 220 local and international delegates. Mr. Ian Makin, Vice President of ICID and Theme Leader - Revitalized Irrigation Systems of IWMI; Ir. Herath Manthirithilake, Head of Sri Lanka Development Initiative of IWMI and Ir. Mohamed Aheeyar attended the Symposium.

14th Asia Pacific Agricultural Policy Forum (APAPF)

The 14th Asia Pacific Agricultural Policy Forum (APAPF) on the theme “Regional Integration and Public Private Partnership” was organized from 31 August to 1 September 2015 in Seoul, Republic of Korea, which was attended by Secretary General Avinash C. Tyagi. The Forum was hosted by the Korea FAO Association / Regional Office of African-Asian Rural Development Organization (AARDO) for Far East, and Global Agriculture Policy Institute.



There were four plenary sessions: Trade Agreement and Agricultural Investment in the Era of Regional Integration; Rice Industry Development and Regional Rice Cluster Focusing on Supply Chain and its Integration; Role of PPP in Sustainable Management of the Climate Change and Food-Energy-Water Nexus; and Agricultural and Rural Infrastructure Development with Human Resource Development and Governance Issues. Dr. Lee, Sang Mu, Chairman, APAP Forum & President, Korea Rural Community Cooperation (KRC) welcomed the delegates and set out the importance of addressing policy issues under the global sustainable development agenda. H.E. Wassfi Hassan El-Sreihin, Secretary General of AARDO and Er. Avinash C. Tyagi, Secretary General emphasized the need to address agriculture policy issues for sustainable rural development and emphasized the importance and dire need of aligning the water as well as agriculture policies in an effort to address sustainable development goals. In the ‘Keynote Speech’ delivered by Dr. Kim, Hoonae, Director of Asia and Pacific Division, IFAD, an emphasis was placed on the need to address the requirements of smallholder farmers who contribute to the global food security. Collaboration between APAP and ICID will help in bringing synergies between National Agricultural and National Water policies in the countries of the region.

PAWEES-INWEPF Joint International Conference, Kula Lumpur, Malaysia

A three-day PAWEES-INWEPF Joint International Conference on the theme “Solutions for Sustainable Water and Environmental Management” was organized by the Malaysian National Committee on Irrigation and Drainage (MANCID), Malaysian Society of Agricultural Engineers (MSAE) and Universiti Putra Malaysia (UPM) from 19-21 August 2015 at Kula Lumpur, Malaysia. The objective of the conference was to create an interactive platform for paddy and water environment related researchers, scientists, practitioners, policy makers and other professionals from Asia-Pacific Region and around the world to share and present their new advances, research findings, and experiences with respect to sustainable water and environmental management in paddy growing areas. The conference was attended by 130 participants, mainly from Japan, Korea, Taiwan, Indonesia, Thailand and Malaysia. A total number of 93 abstracts, and 85 full papers were received for oral presentation with 5 papers for posters.



During the conference, two keynote presentations and six plenary papers, including four parallel sessions and various topics were organized. A field trip to a rice granary was organized on the last day of the conference. ‘PAWEES International Award’ were given to Dr. Kazumi Yamaoka, Dr. Nobumasa Hatcho, Dr. Jongdae Choi, Dr. Ming His HSU from Japan and ‘PAWEES SAWADA Prize for Best Paper Award’ were also given to Dr. Ankit Singla and Prof. Kazuyuki Inubushi from Chiba University Japan for their paper entitled “Effect of biochar on CH₄ and N₂O emission from

soils vegetated with paddy". More than 50 participants participated in a field trip to the Integrated Agricultural Development Area (IADA), Barat Laut Selangor and Malaysia's rice granaries.

Second Asian Irrigation Forum, Manila, Philippines

The Second Asian Irrigation Forum (AIF2) was organized by the Asian Development Bank (ADB) on the theme 'Securing Water and Food for the Future' at Manila from 20-22 January 2016. President Dr. Saeed Nairizi, Secretary General Er. Avinash C. Tyagi and Executive Director Er. Harish K. Varma attended AIF2. President Dr. Nairizi made a Keynote Address on the topic 'Securing Water and Food for the Future - Role of ICID, and gave an overview of the global water scarcity situation and highlighted the challenges faced by the water resources sector and possible options to address these challenges for sustainable development of irrigated agriculture. He also highlighted initiatives taken by ICID to address the issues and concerns of the sector.



Dr. Nairizi handed over award to the three winners of Youth video competition on the theme 'Who's is growing tomorrow's food'. AIF2 covered presentations and discussions on various aspects related to revitalizing irrigation performance; innovations to meet future needs for water, energy and food; innovative and improved financing; good governance in irrigation; application of new techniques and technologies irrigation management; private sector participation in irrigation management; institutional challenges etc.

Regional Consultation on Climate Services for the Third Pole Rajasthan, India

A three-day Regional Consultation on Climate Services for the Third Pole and other High Mountain Regions, was jointly organized by India Meteorological Department (IMD) and World Meteorological Organization (WMO), from 9-11 March 2016 in Jaipur, India. Secretary General Avinash Tyagi, attended the regional consultation representing the needs of climate information from irrigation managers perspective.



Dr. M. Rajeevan, Secretary of Ministry of Earth Sciences, inaugurated the Session and emphasized the need for more observations, development of models with usable skills and partnership in 3rd Pole Region. He deliberated on the programs under Ministry of Earth Sciences in the region and assured India's support in developing road map, setting priorities and sharing expertise in climate change and climate services. Dr. Laxman Singh Rathore, Director General of Meteorology, Vice Chair of Inter-Governmental Board for Climate Services of WMO focused on capacity building needs and developing national and regional plans to operationalize climate services. Dr. R.K. Kolli, Chief of World Climate Applications and Services Division, WMO gave a holistic view of climate services in the world and over 3rd Pole in particular.

Workshop on Waterlogging and Soil Salinity in Irrigated Agriculture, Chandigarh, India

ICID co-organized jointly with Central Water Commission (CWC), Central Board of Irrigation and Power (CBIP) and Indian Council for Agricultural Research (ICAR) a two-day Workshop on "Waterlogging and Soil Salinity in Irrigated Agriculture" from 3-4 September 2015 at Chandigarh, India, which was also sponsored by Jain Irrigation Systems Limited (JISL). More than 160 participants attended the workshop. 'Welcome Address' was delivered by Er. A.B. Pandya, Vice President of ICID. Er. Harish K. Varma, Executive Director of ICID made a presentation on 'Overview of Agriculture Drainage Management –



Global Perspective' during the Plenary Session giving brief background of ICID activities, especially of working group on drainage, issues and challenges in agriculture drainage management, remedial approaches adopted by different countries and way forward for agriculture drainage management. Dr. Gurbachan Singh, Member of the ICID's Working Group on Sustainable Drainage (WG-SDG) made a presentation on 'Salinity Management in Agriculture: Issues and Strategies'. Dr. Vijay K. Labhsetwar, Director of ICID also attended the workshop.

Water Conference 'Exploring New Business Opportunities with the Dutch', New Delhi, India

ICID on the invitation of the Netherlands Embassy, participated in the Water Conference titled 'Exploring New Business Opportunities with the Dutch' organized on 16 November 2015 at New Delhi. H.E. Alphonsus Stochinga, the Ambassador of the Netherlands welcomed all the participants and introduced the aim and objective of the conference. He highlighted that water sector is on top priority of Dutch Government for collaboration and cooperation with India with focus on Ganga river rejuvenation, Yamuna river front development, support for smart cities project mainly related to urban water sector, water management practices, and ground water recharge systems, monitoring system for water etc for which a Memorandum of Understanding (MoU) has been signed between Dutch and Indian Governments. ICID and the Netherlands Embassy explored opportunities of collaboration in the field of agriculture water management including capacity development programme for Africa and Asia.



Climate Services Users Forum for Water Sector

ICID and WMO jointly organized a Climate Services Users Forum (CSUF) for Water Sector in conjunction with the 6th session of the South Asian Seasonal Climate Outlook Forum (SASCOF6) from 22-24 April 2015, in Dhaka. CSUF is useful in continuing dialogue between user agencies and climate service providers. CSUF, the second in the series in South Asia provided a platform for joint action by the water managers and the climatologists to maximize the usefulness of climate services and help develop new and improved applications of climate information for the water sector.



Two pilot projects one for seamless predictions of reservoir inflows in India and another on long term flood forecast for rivers flowing into Bangladesh were chosen for joint activities. Skilful forecast of monsoon in the extended range time scale which is already being made on an experimental basis by Indian Institute of Tropical Meteorology (IITM), Pune and its further improvement and operationalization under the "National Monsoon Mission" Project of Govt. of India, is expected to provide the required climate information for input into the hydrologic models.

European Regional Working Group

The European Regional Working Group (ERWG), established in 1995 with the mandate of promoting awareness about relevant water issues at all levels and to pay special attention to the environmentally sustainable water management in the region with representation of 17 countries. ERWG includes 7 National Water Management Associations and 5 European professional organizations and 5 European Water Management Institutes. ERWG collaborates with number of organisation in the region including Central and Eastern Europe Global Water Partnership (CEE-GWP), World Wide Fund for Nature (WWF) etc.



The Group celebrated its 20th Anniversary on 14 October 2015 at Montpellier, France. VPH Dr. Hayde, Chairman, ERWG gave a presentation about the 20 years history of the Group, highlighting background of establishment of ERWG, its mission, activities, projects, publications etc. During the meeting of the Group at Montpellier in October 2015, Mr. Bernard Vincent, Chairman of WG-SDG made a presentation on the recent works and achievements of WG-DRG and possible links between the thematic WG and the regional working group of EWRG and Mr. Mati Tonismae made a presentation on the regional co-operation and workshops by Baltic countries, Russia and Finland. At the meeting of the Group, Vice President Ian Makin was elected as new Chairman.

The host French National Committee of ICID (AFEID) organised ICID's 26th European Regional Conference (ERC) on the main theme 'Innovate to improve irrigation performance' details of which are presented in key events sections.

Mediterranean Forum on Water Resources

'Mediterranean Forum on Water Resources' (MRWR) was organized from 18-22 October 2015 at Matera, Italy. VPH Dr. Ragab (UK) represented ICID and made a presentation on 'Water and Food Security'; VPH Prof. Lucio Ubertini (Italy) and Chair, UNESCO – Water Resources Management and Culture delivered a talk about the Role of International Institutions on Cooperation; Dr. Marco Arcieri (Italy), Secretary General of Italian National Committee of ICID (ITAL-ICID) delivered a talk on 'Large dams and security issues' and Dr. Antonio Linoli (Italy) delivered a speech titled 'Aqua Augusta: a complex system of roman aqueduct' during the Plenary Sessions.



During the workshop, the scientific community discussed the issue of 'Aqua 2015' an initiative conceived by Italian Government within the Framework of 'EXPO 2015' in order to stimulate awareness about the importance of proper water resources management.

Conference on Global Food Insecurity and Hunger

The McGill Institute for Global Food Security organized its 8th McGill Conference on Global Food Insecurity and Hunger from 27-28 October 2015 at MacDonald Campus, McGill University, Montreal, Canada. The main theme of the conference was 'Current and Future Challenges for Sustainable Food Security'. During the Conference, the 'Opening Remarks' was made by Dr. Hugo Melgar Quiñonez, Director of McGill Institute for Global Food Security; Dr. Kanayo F. Nwanze, President of International Fund for Agricultural Development (IFAD) addressed the theme of the conference as Public Lecture Speaker; and David Bergvinson, Director-General of International Crop Research Institute for the Semi-Arid Tropics (ICRISAT) was the 'Keynote Speaker' on Digital Agriculture. A large number of representatives from government, students, academics, the private sectors, non-governmental agencies and civil society participated. President Hon. Dr. Chandra A. Madramootoo made a Keynote presentation on 'Breaking the Barriers to Food and Water Insecurity'.



Key ICID Events

Two major ICID events were held in 2015 viz. 26th European Regional Conference along with the annual Workbody meetings and 66th International Executive Council meeting at Montpellier, France, from 11-16 October 2015. The following is a brief report of these two events:

European Regional Conference, Montpellier, France

26th Euro-Mediterranean Regional Conference on irrigation with the theme "Innovate to improve irrigation performance" was organized by the French National Committee of ICID (AFEID) from 11-16 October 2016 at Montpellier, France. The core objective was to provide analysis and to exchange experiences with world-wide community of irrigation experts on following three sub-themes:

- (1) Innovations for smallholders in irrigation;
- (2) Wastewater use in agriculture; and
- (3) Governance of surface water and groundwater.



The six technical sessions on these sub-themes focused on innovations in irrigation and analysed their drivers, processes and results for adoption by irrigation professionals worldwide. What could be the winning formula for drip irrigation was discussed under sub-theme 1. Further, the potential for waste water use in agriculture was discussed in sub-theme 2. The incorporation of treated waste water reuse in the mainstream water management paradigm was recognised. The participants further recognized that the unresolved issues such as global volumes of waste water available for agriculture; most relevant level of water treatment, economic and environmental analysis also need to take up in future. The sub-theme 3 of the conference highlighted the key issues in groundwater governance, monitoring and logistics as well as the alignment of the private and public interests. During the conference, 10 international workshops were co-organised by ICID WGs/TFs and other partners. The conference was attended by 800 participants from 65 countries and more than 300 papers/posters were received. All presentations from various sessions of the conference are available at <http://icid2015.sciencesconf.org/resource/page?id=68&lang=en>.

Besides exhibitions, poster presentations and technical visits/tours, two half-day training workshops were also organized for young professionals. Thirteen young professionals from different countries, were sponsored by Ministry of WR China, WMO and KRC, and actively participated in various technical sessions by way of working as rapporteur/ coordinator of the sessions besides participating in the ICID work body meetings.

66th International Executive Council

The European Regional Conference was followed by the 66th International Executive Council (IEC) meeting and its pre-Council meetings held from 11-16 October 2015. Some of the important decisions taken during the meetings are:

Vision 2030

The Vision 2030 document for ICID was discussed at various platforms during the meeting of various work bodies. The Council adopted the Vision as "Water secure world free of poverty and hunger through sustainable rural development." The adopted Mission is "Working together towards sustainable agriculture water management through inter-disciplinary approaches to economically viable, socially acceptable and environmentally sound irrigation, drainage and flood management."



In order to realise the vision, ICID has adopted six organisational goals for the network as already reported (See Page 2).

The Vision 2030 document summarizes what the network represents and whom it intends to serve through the sustainable development paradigm over the next 15 years. The document can be accessed at: http://www.icid.org/vision_2030.html.

Establishing Technical Support Unit (TSU)

In order to achieve the objective of the Vision 2030, a Technical Support Unit (TSU) was approved to be established by the Council with the aim of undertaking capacity development activities in the field of agriculture water management. TSU will consist of distributed network of expert volunteers who commit to dedicate themselves to the TSU activities.

Establishment of new workbodies

As a culmination of the review of the Strategy Theme 'Schemes' and to improve capacities in the countries to undertake new challenges posed by the requirements of SDGs following new WGs/ mechanisms were established / approved.

1. WG-IDM: Irrigation Development and Management (Chair: VPH Francois Brelle);
2. WG-WATS: Water Savings in Irrigated Areas (Chair: Mr. Mehrzad Ehsani);
3. WG-CDTE: Capacity Development, Training and Education (VP Abdelhafid Debbarh);
4. TF-WWF8: Task Force to Guide ICID Inputs to World Water Forum 8; and
5. IYPeF: Approval to establish IYPeF LinkedIn Group

Awards

Every year, ICID recognizes the Best Paper published in the Irrigation and Drainage Journal; encourages water saving in agriculture by recognizing the technologies, water management practices, young professionals and the farmers; and inscribes historical irrigation structures in ICID register. In addition, Sixteen irrigation structures (9 Approved, 7 Provisional) were included in the ICID Register of Heritage Irrigation Structures. They are described in next section (Rewarding Excellence).



Rewarding Excellence

In order to encourage irrigation professionals to improve various aspects of agriculture water management, ICID has instituted a number of awards to recognize the works and encourage the researchers for their outstanding contributions. The objective is to encourage development and implementation of innovative technologies, agronomic innovations, improved management practices, and institutional reforms to bring higher crop productivity, higher farm income, and preservation of the land, water the environment resources for irrigated and rainfed agriculture ensuring sustainable development.

WatSave Awards 2015

WatSave Award instituted in 1997 are given for proven and robust technology, tool or work that has actually resulted in saving of water in agriculture. Like every year, the WatSave Awards were given during the 66th IEC meeting held at Montpellier, October 2015. Out of the four categories, in which awards were given every year, the awards were given only in three categories in 2015; the technology award, innovative management award, and farmer award. The research works of the winners awarded during the year are briefly described below:

Technology Award

Prof. Li Xinjian (China) received the 'WatSave Technology Award 2015' for his work on "Water saving, pollution prevention and emission reduction of paddy rice". The technology of controlled irrigation for paddy rice included the optimal combination of irrigation time, irrigation frequency, irrigation quotas, and control of water level in the field and fertilizer applications. The controlled irrigation technology for paddy rice has been applied in larger area in South China. From 1990 to 2013, the technology is being promoted on an area of 15.3 million ha in the region resulting in 28.7 billion cubic meters of water savings during the period. For more information, refer to ICID News 2015 (First Quarter), http://www.icid.org/icidnews_16_1.pdf



Innovative Water Management Award

Prof. Samiha Ouda and Prof. Abd-El-Hafeez-Zohry (Egypt) received the 'WatSave Innovative Water Management Award 2015', for their work on "Crop Rotation: An Approach to save irrigation water under water scarcity in Egypt". Crop rotation is an agricultural management practice that could save on the applied irrigation water. This practice is one of the most effective agricultural control strategies. Crop rotation in Egypt has helped in the sustainable use of natural agricultural resources; increase the agricultural productivity of unit land and unit of irrigation water under the prevailing conditions of water scarcity. This innovative irrigation management method resulted in considerable water saving and improved standard of living of farmers. For more information, refer to ICID News 2015 (First Quarter), http://www.icid.org/icidnews_16_1.pdf



Farmer Award

Mr. Bhagwan M. Kapse (India) received the WatSave Farmers Award 2015 for "Group Farming and Micro Irrigation a Way to Prosperity" to enhance the resource utilization in a rural setting. It is important to overcome the challenges of efficiency in resource utilization, adoption of modern

technology, production of quality produce, processing and marketing. It is not possible for small farmers to raise their efficiency individually in attaining higher yields per acre of land, per drop of water or per rupee invested. Drawing on age old wisdom/experiences in cooperatives, Mr. Kapse came up with a strong promising option of 'Group Farming' to address these challenges. He not only promoted 'Group Farming' for just survival but also as a bridge to prosperity through better income generating options and efficient application of technical interventions. Mr. Kapse has successfully developed and applied a model of rural community management which resulted in tremendous water savings and enhanced yields towards poverty alleviation of the farmers in the region. For more information, refer to ICID News 2015 (First Quarter) <http://www.icid.org/icidnews_16_1.pdf>



Best Paper Award

ICID instituted the 'Best Paper Award' in 2006 in recognition of the outstanding paper contributed to 'Irrigation and Drainage', the Journal of ICID, during the preceding year (January-December). The award consists of a citation plaque and either US\$ 500 cash or US\$ 800 worth of Wiley books from M/s. Wiley Blackwell (UK). The 'Best Paper Award 2015' was given to VPH Dr. Willem F. Vlotman and Mr. Clarke Ballard (Australia) for their paper titled "Water, Food and Energy Supply Chains for a Green Economy" published in the Special Issue: First World Irrigation Forum, April 2014, Volume 63, Issue 2. The award winning paper can be accessed at <http://www.icid.org/best_pap_2015-ird-63.2.pdf>. A brief article is also covered in ICID News 2015 (First Quarter), <http://www.icid.org/icidnews_16_1.pdf>

Recognition to "Heritage Irrigation Structures"

At the 63rd International Executive Council (IEC) Meeting held at Adelaide, Australia in 2012, the idea for recognition of the historical irrigation structures was initiated. During the current year, nine irrigation structures from three countries were approved for inclusion in the ICID Register of World Heritage irrigation Structures at the 66th IEC meeting. These are:



China: (1) Quebe Pond; (2) Tuoshan Weir; (3) Zhuji Shadoof Irrigation System

Thailand: (1) Rangsit Canal and Chulalongkorn Regulator; (2) Sa Reed Phong Dam

Japan: (1) Irukaike Reservoir; (2) Kumedaika Reservoir; (3) Sadaiyousui Irrigation System; (4) Uwae Irrigation Canal;

Details of all the approved structures are now included in the online Register of Heritage Irrigation Structures made available on ICID website < http://www.icid.org/icid_his1.php>.



Knowledge Management and Dissemination

One of the objectives of the Commission is to facilitate exchange of information among its members and various stake holders. This objective is achieved through a mix of communication tools/ technologies like Internet, publications (digital and print format), and social media. Dissemination of information, knowledge and sharing of successful experiences in agriculture water management forms an important activity.

ICID has prioritized knowledge management to fulfil its new vision and mission. Info-rich ICID website, and flagship publication 'Irrigation and Drainage' Journal are the main tools in implementing dissemination strategy. The effort is supported by periodicals like weekly e-Bulletin, besides the monthly News UPDATE and the quarterly ICID NEWS. In addition, ICID brings out special publications, reports as an outcome of the work body activities. National Committees also brings out publications of their specific interest, besides Newsletters, Journals in their local languages.

The digital publications are now freely accessible/downloadable to all our registered members through the 'Members only' section on ICID website <<http://www.icid.org/ximlogin/login.php>>.

ICID Website

ICID website provides an easy access to a wide range of information on irrigation, drainage, flood management and serves as a vital mechanism of communication with ICID NCs and partners. During this year the website has gone through many additions and changes, which includes: Expansion of ICID Register of Heritage Irrigation Structures (HIS); Irrigation and Drainage - Products and Services Directory; new Tools/Models; Digital collection of ICID publications/ reports; ICID Young Professional's e-Forum (IYPeF); Discussion Forum for WG-M&R, 2nd World Irrigation Forum (WIF2), etc. The website as updated on regular basis and receives on an average, 18,500 hits plus per month. Some of the other major sections are as follows:



www.icid.org

Integrated Library Management System (ILMS)

The Text Delivery Services (TDS) established in 2001 with an objective to collect and disseminate the grey literature, which is not covered under copyright restrictions. The service has been further improved by expanding its scope to a virtual technical library by adding ICID technical library catalogue for online searching. While the old TDS database included only Books and Articles for online searching, additional data items such as CD-ROMs, Journals, Maps, Video / DVDs etc. are now being part of this database. In addition, all digitized ICID publications and documents from the year 1950 onwards are now available in e-format. The digital collections are now being made available for download through 'Members only' section of ICID website.

To develop 'One-Stop Knowledge Catalogue' on irrigation and drainage, selected Green NCs (Bangladesh, China, Egypt, India, Iran, Italy, Korea, Pakistan, South Africa, Sri Lanka, Turkey, and Zimbabwe)

were invited in 'Phase-1' to join the data building campaign. Few NCs have shown their interest to join this network and others are expected to follow soon.

All publication brought out after 2000 are available in e-Publication (EPUB) format in collaboration with M/s De Books New Delhi. The facility is now operational and visitors interested in EPUB can view these publications online.

The 'Basic Information' section introduces with widely used irrigation and drainage terms under themes such as: Irrigation, Drainage, Flood Management, Climate Change and Irrigation Systems, Drought Management etc. Under each thematic area a number of sub-topics have been introduced. During the 66th IEC meeting workbody members were requested to undertake these important topics and sub-topics and further develop as per their expertise and domain.

The 'Resources' section provides links to open source tools available in the irrigation and drainage sector such as: Basin wide Holistic Integrated Water Management (BHIWA) Model; PODIUM - The policy dialogue model; Multilingual Technical Dictionary (MTD); Water Evaluation and Planning (WEAP) Model; SALTMED Model etc. The section is proposed to be strengthened through voluntary contribution by the experts from various WGs.



ICID Register of Heritage Irrigation Structures (HIS)

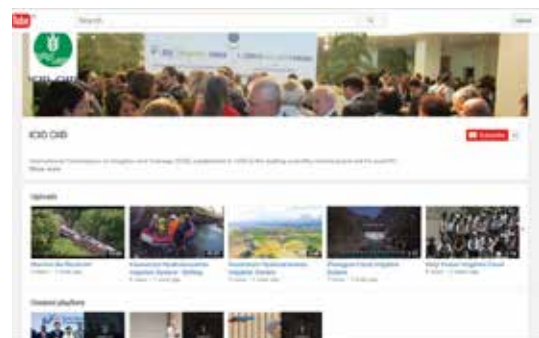
With the inclusion of nine new Heritage Irrigation Structures, the Register now consists of 25 Structures, which are now available online at http://www.icid.org/icid_his1.php.

Nomination for heritage irrigation structures is open and NCs can submit nominations throughout the year. A milestone from administrative perspective has been earmarked as 15 July every year, specifically to enable the International Jury to process them before the next IEC meeting held generally between September – November for inclusion in the "ICID Register of Heritage Irrigation Structures". NC can nominate more than one structure, using separate nomination form for each structure. Associated Members and non-member countries can nominate their structures through the neighbouring active NCs or by submitting directly to Central Office. For information related nomination form and more details, visit http://www.icid.org/icid_his1.php.



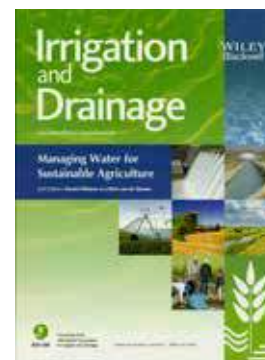
Social media

ICID YouTube channel is growing fast from the contributions received from members and partners; and SlideShare account has also enriched with many new presentations made at various ICID events providing a versatile medium to share information widely. In addition, some 20 workbody websites are operational through ICIDONLINE.ORG domain name. A LinkedIn page for ICID <<https://www.linkedin.com/in/icid-ciid-1544819>>, and separate groups for WG-ENV, ICID Young Professional's e-Forum - IYPeF <<https://www.linkedin.com/groups/6990321>> has been set up as a professional network and is open for discussion to all persons. Now ICID LinkedIn page is part of many water related groups and got very good attention. ICID's 'Facebook' page <<http://www.facebook.com/icidat>> is growing steadily for informal communication between members with common interest and thereby promoting their activities. All the received pictures of the events are widely circulated through this medium. All are invited to make good use of these new platforms.



Irrigation and Drainage Journal

'Irrigation and Drainage' is the official journal of the International Commission on Irrigation and Drainage (ICID) and is published by M/s. Wiley-Blackwell (UK) for the last 14 years. The Journal is a peer-reviewed specialized flagship publication of ICID and features technical papers on all scientific, engineering, environmental and socio-economic issues associated with irrigation, drainage and flood management. The Journal is a rich resource of references to professionals, engineers, researchers, university professors and students of irrigation, drainage, and agricultural disciplines. With ISSN series (ISSN 1531-0353) it appears under the categories of 'Water Resources' and 'Agronomy'.



The Journal is guided by an International Editorial Board (EB-JOUR) which is chaired by President Hon. Prof. Em. Bart Schultz (The Netherlands). Five issues of the Journal are published every year along with one or two extra 'Special Issues' focusing on the current topics of significance during the year.

The Journal is widely distributed around the world. Each NC gets 10 free copies (5 copies as 'online only' + 5 copies as 'online + print'). All Office Bearers and workbody members are provided free online access. Additional copies of the Journal can be purchased at subsidized rates by ICID members.

Under the Research4Life programme, local, not-for-profit, institutions of select countries may register for access to Irrigation and Drainage for free under the initiatives AGORA (agora@fao.org) and OARE (oare@oaresciences.org). The Journal is accessible online at more than 9000 institutes worldwide, of which about 5000 are in developing countries. The full text of the Journal is available through Wiley Online Library [http://onlinelibrary.wiley.com/journal/10.1002/\(ISSN\)1531-0361](http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)1531-0361) for all issues published since 2001. Access to abstracts is freely available to all guest users, with facility to view full text papers, or to newly accepted papers which have been not published in print so far, is limited to paid subscribers only. All papers have linkages to other Cross Referenced papers from the reference lists.

Weekly e-Bulletin

The e-Bulletin is a weekly compilation of important and latest news items on agriculture, climate change, drainage, droughts, floods, food security, irrigation and water resources management across the world. It also includes information on forthcoming events, latest publications, editorials and opinions and employment opportunities that might be of interest to the ICID fraternity. Brief news items are hyperlinked and direct the reader to the detailed news item. Fifty one issues of ICID e-Bulletin were compiled and prepared during the year and sent to NCs, Office-Bearers, Workbody Members, International Organizations (IOs), and other subscribers. NCs are encouraged to provide the contact details of their members and interested institutions, so that the e-Bulletin services could be provided to all of them directly from the Central Office. Past issues of e-Bulletin can also be accessed from www.icid.org/ebulletin.html.



Monthly News Update

The News Update is a monthly e-publication of ICID that provides update on the progress made on various decisions taken by IEC and covers current news from NCs, brief reports of the activities of the President and other Office Bearers of ICID, outcomes of the national/regional level workshops, meetings, announcement of ICID and related events, international workshops, training courses etc. Past issues of the News Update can be viewed at www.icid.org/icid_newsupdate.html.



Quarterly ICID News

ICID News intends taking technical issues to the non-technical stakeholders. Published quarterly, it includes short invited technical articles from eminent professionals on topics of current interests relating to agriculture water management. Past issues can be accessed at http://www.icid.org/news_icidnews.html. Following are some of the articles published during April 2015 – March 2016:

- Technology smart approach to keep drip irrigation systems functional, by VPH Felix Reinders
- Water, energy and food supply chains for a green economy, by VPH Dr. Willem F. Vlotman, and Clarke Ballard
- Improving water productivity: Can technologies pave the way, by Ms. Yasmin Siddiqi
- Limpopo smallholder irrigation management issues, by Lani van Vuuren
- Water footprint as a policy tool and its standardization, by Dr. Young Deuk Kim
- Value of ecosystem services provided by irrigated agriculture, by Dr. Jourdain Damien, and Dr. Sylvie Morardet
- Integrated flood management: From theory to practice, by Dr. Giacomo Teruggi, Ms. Sara Oppenheimer and Ms. Maud Poissonnier-Lecuras
- Nano technology for delivering plant nutrition, by Mr. Sunil Nanda
- Biofuels in the context of agriculture water management, by VPH Laurie C. Tollefson
- Public private partnership in irrigation management, by SG Avinash C. Tyagi
- Muhuri Irrigation project: A PPP pilot project, by Arnaud Cauchois
- Solar energy for the irrigation water supply in Spain, by J.A. Rodriguez-Diaz
- Solar plants atop canals to save on land and water in India, by Dr. Mukesh Joshi
- New approach of farm management under surface irrigation to improve water saving and productivity, by Prof. Dr. Yousri Ibrahim Atta
- Improved irrigation technologies in paddy cultivation, by SG Avinash C. Tyagi, and M.L. Baweja
- Non-point sources pollution and best management practices, by Anna Tedeschi and Ezee, G.C.



National Committee Publications

- IACID, Australia: Brought out 6 issues of the quarterly published 'Irrigation Australia' journal <<http://irrigation.org.au/publications-resources/irrigation-australia-journal>>
- ABID, Brazil: Brought out 'Irrigacao & Tecnologia Moderna – ITEM' journal published in Portuguese language < <http://www.abid.org.br/revista.asp>>
- IWF/ICID.UK: brings out News & Views, April, 2015, No. 57
- KCID, Korea: brings out KCID Magazine, Korean National Committee on Irrigation and Drainage (KCID), 2015, No. 55, No.
- USCID, USA: brings out USCID Newsletter, 2015, No. 120



Technical Library

ICID Central Office technical library has a large collection of technical books, reports, proceedings, and periodicals, besides ICID's own publications. The Library receives about 21 periodicals on complimentary basis. With the acquisition of 17 new books during the period 1 April 2015 to 31 March 2016, the Library has acquired 32,251 technical reference documents on various aspects of development, operation, maintenance, and rehabilitation of irrigation works. All ICID publications including the technical books, reports, proceedings, and workshops, etc. are digitized and available on request.

In addition, Central Office Technical Library, with the help of a new online library software on ICID website (www.icid.org/members_only/openbiblio/opac/index.php), host 12107 entries under "Articles Section"; and 55 entries in CD-ROMs/DVD section. The service would be beneficial for all ICID members and National Committees as this would provide easy access to all ICID publications. To expand the scope of the library catalogue, NCs can join this online catalogue service by contributing their locally available literature to develop Integrated Library Management System (ILMS) which is an attempt to serve as One-Stop Knowledge Catalogue for all Irrigation and Drainage related literature to the ICID community and all irrigation professionals.





Capacity Development Activities

Lack of capacity is constraining the development of irrigated agriculture. Due to increasing complexities of development; multi-disciplinary nature of sustainable solutions; the close linkages between water-food-energy-ecology, rapid changes in the irrigation and drainage sector; the need to bring together various stakeholders who might not necessarily be experts requires special impetus to enhance the capacity of various stakeholders at various levels. At the same time, many countries are facing shortage of qualified technical persons in agriculture water management (AWM).

Technical Support Unit (TSU)

The main purpose of the TSU is to support the member countries in general assessment of gaps in AWM capacities within the countries and suggest possible solutions; developing feasibility reports for small and medium irrigation, drainage and flood management proposal and undertaking assessment of training requirements. The 66th IEC Meeting approved establishment of TSU with the overall objective to “Undertake capacity development activities in the field of agriculture water management (AWM) in support of rural development” with the following broad scope to:

1. Coordinate capacity development programs of ICID;
2. To liaise in developing a knowledge base in AWM with the help of ICID working groups, partner institutions and member countries; and
3. To support the member countries in:
 - a. General assessment of gaps in AWM capacities within the countries and suggest possible solutions;
 - b. Developing feasibility reports for small and medium irrigation, drainage and flood management proposal,
 - c. Training assessment needs; and
 - d. Undertaking capacity development activities.

TSU will support initiating studies and activities on request, to help member countries. consists of a distributed network of expert volunteers who are committed to dedicate about ten man-days to the TSU activities with a coordination unit located in the Central Office. Members or partner institutions would be requested to sponsor personnel to the coordination unit of TSU from time to time, as required. In order to ensure smooth functioning of TSU, a ‘Capacity Development Fund’ is established and support is solicited from member countries on a voluntary basis.

ICID Scholarships to Young Professionals

In 2015, twelve young professionals endorsed by the National Committees (NCs) and partner International Organizations (IOs) were awarded full scholarship for attending the 26th European Regional Conference (ERC) and 66th International Executive Council (IEC) meetings at Montpellier. Two training workshops “Coupling innovative methods for participatory water management” by Nils Ferrand (IRSTEA) and “Integrated Flood Management: from theory to practice” by Mr Giacomo Teruggi (WMO) were organized in order to enrich the knowledge of YPs.

The Associated Program on Flood Management (APFM), hosted by the WMO organized the training workshop on “Integrated Flood Management: From theory to practice” with the objective of introducing the concept of Integrated Flood Management (IFM) to the Young Professionals and to familiarize participants with the concept of IFM. Mr. Giacomo Teruggi, Ms. Sara Oppenheimer and

Ms. Maud Poissonnier - Lescuras from APFM, introduced the concept of IFM to the participants. ICID's President Dr. Saeed Nairizi thanked WMO for the financial support provided for the participation of Young Professionals from developing countries to this training and wished for further cooperation between the APFM and ICID to support developing countries on issues related to irrigation, water, weather and climate.

YPs were also exposed to the activities of ICID through active participation in various technical sessions viz. assignment as rapporteur/ coordinator of the sessions and participation in the work body meetings.

ICID Young Professionals e-Forum (IYPeF)

In order to throw open ICID platform to all the Young Professionals interested in agriculture water management issues, an ICID Young Professional e-Forum (IYPeF) as a new LinkedIn group (<https://www.linkedin.com/groups/6990321>) has been established. IYPeF will host the young irrigation and drainage professionals around the world for a meaningful and coordinated discussions on issues of interest to Young Professionals. The Forum will not only be virtual meeting place but also a platform that would serve as a stepping stone into annual events of ICID that would provide opportunities to the budding professionals for interacting with the best professionals in irrigation and drainage sector, present papers, avail latest information and join technical working groups.

International Education and Exchange Centre in Korea

Agricultural reform and its efficient application to rural community, led by the Korea Rural Community Corporation (KRC), was a source of energy for Korea's remarkable economic development. In order to share KRC's experiences and expertise in agriculture and rural development, KRC is establishing a Rural Community-International Education and Exchange Center (RC-IEEC) as a platform for sharing and offering capacity building programs to the developing world. It will provide world class education programs and training courses on agriculture and rural development at an affordable cost. Duration of the programs will vary from 2 weeks to 6 months. The Center whose ground breaking ceremony was organized on 1 September 2015 and attended by Secretary General, the courses commence from 2017. ICID was invited to partner RC-IEEC to collaborate and use the facilities for its capacity building activities. More information about RC-IEEC is available at <www.ieec.kr>.



Asian Institute of Technology (AIT)

Secretary General Avinash Tyagi visited AIT, Bangkok and met President Dr. Worsok Kanok-Nukulchai along with Dr. Mukand Babel, Professor Water Engineering and Management. After discussion, AIT agreed to be one of the Technical Partners in WIF2 and nominated Dr. Mukand Babel as a member of the International Technical Advisory Committee (ITAC). The possibility of AIT organizing certain courses jointly with ICID was also discussed.



Capacity Development and Awareness Raising in Agriculture Water Management: Developing partnerships

As a sequel of establishing the Working Group on Capacity Development Training and Education (WG-CDTE), ICID is exploring the partnership with various regional institutions engaged in agriculture water management in different parts of the world. Secretary General Avinash Tyagi and Executive Director Harish Kumar Varma, visited Indian Institute of Roorkee (IITR), Roorkee, India on 13 January 2016 and discussed with the officials of Department of Water Resource Development & Management (DWRDM) and Department of Hydrology (DoH) of IITR and National Institute of Hydrology (NIH) of Government of India. The discussions centered on opportunities for organizing training courses for middle-level professionals, and need for raising awareness of public at large regarding challenges and issues related to water resources sector development of e-learning modules.

DWRDM and DoH offered their services to support ICID's capacity development initiative of middle-level professionals working in the fields related to agriculture water management. DWRDM and DoH also agreed to consider taking up studies and research in the topics of interest to ICID through their students pursuing masters and doctorate level program. In addition to lack of capacity development, it also emerged during discussions with NIH, DWRDM and DoH that public awareness on water related issues are missing and ICID, as an international organization, should take a lead to address these issues and develop simple e-Learning modules.

Fact Finding Mission to Assess Agricultural Water Management in Democratic People's Republic of Korea (DPRK)

An international team consisting of Vice President Dr. Ding Kunlun, Secretary General Avinash Chand Tyagi and Mr. V.K. Aggarwal, expert from India visited Democratic People's Republic of Korea (DPRK) from 2-8 November 2015 at Pyongyang on the invitation of Association for the Promotion of International Economic and Technical Exchange (APIETE). The objective of the mission was to assess capacity development needs for better agriculture water management. The terms of reference (ToRs) of the Mission was to : (i) to assess the factors that contribute to the erratic food production in the country; (ii) to assess the capacity of relevant institutions to make best use of the available science and technology for improving food productivity; (iii) to assess the present status of irrigation and drainage management infrastructure, institutional arrangements and management practices; (iv) to assess the use of weather and climate information for agriculture and drought early warning; (v) to analyze flood management issues, including flood forecasting and warning and suggest suitable improvement measures; and (vii) to prepare short, medium and long-term recommendations for improvement in the agriculture water management.



The team met experts from irrigation, drainage and flood management areas and held detailed discussions with more than 30 North Korean experts. For a better understanding of the emerging issues, the team collected relevant information on agriculture water management in DPRK, like demography and climate; water resources; irrigation development; status of reclamation and drainage, agricultural development, flood situation, flood and drought early warning system and disaster response mechanism.

The Team also explored the possibility of DPRK becoming a member of ICID. It was explained that a number of institutions within DPRK, dealing with irrigation, drainage and flood management issues should join together to establish a National Committee or a platform for coordination and collaboration among various stakeholders engaged in agriculture water management. APIETE requested ICID to help organize a National Workshop on Agriculture Water Management.





Financial Management



Judicious financial management of an international professional network of voluntary experts is a key to achieve its mission as it provides the required confidence among its members and volunteers, help mobilization of financial resources and generates confidence of the patrons. ICID therefore has put in place a transparent financial management system with sufficient checks and balances.

ICID's major financial resource is subscriptions from its member countries and direct members and special budget contributions by the host National Committees of ICID events. Currently, ICID network is spread over 75 countries across Africa, Americas, Asia and Oceania, and Europe, covering over 95% of the irrigated area of the world. Presently, there are 59 members as compared to 56 member countries at the end of the previous Financial Year ending 31st March 2015. The Commission also receives funds from NCs and International Organizations to support specific activities to further the ICID objectives.

Secretary General of ICID, in accordance with its Constitution, acts as the Treasurer and the Financial Controller of the Commission under the overall aegis of the International Executive Council (IEC) which is assisted by the Permanent Finance Committee (PFC) for all its financial considerations.

PFC looks into all financial matters and reviews income and expenditure, advises the Council on the previous year's accounts and also on the budget proposals for the coming three years. It makes recommendations on the annual subscriptions and other financial support of the participating NCs for the current and future years. The Commission also recommends to the IEC, from time-to-time, ways and means of improving the financial resources by undertaking different programs and activities emanating from the other work bodies. Vice President Hon. Laurie Tollefson was appointed as chair of PFC by President Dr. Saeed Nairizi during the 66th IEC meeting in October 2015 at Montpellier, France.

Financial Accounts of the Commission are regularly audited, on an annual basis, by a Statutory Auditor, appointed by IEC, as per the Indian Accounting and Assurance Standards and are complying with the Foreign Contribution Regulation Act (FCRA), 2010; Income Tax Act, 1961; and Society Registration Act, 1860.

The consolidated financial statement, which include Balance Sheet and Income and Expenditure for the Financial Year starting from 1 April 2015 to 31 March 2016 is duly audited and presented on page 70.

FINANCIAL STATEMENT

Balance Sheet as on 31st March 2016

ASSET		2015-16 (Amount INR)	2014-15 (Amount INR)
1	Property & Equipment	114,13,117	123,81,385
2	Receivables	129,69,440	124,95,808
3	Stock of Publications	2,41,800	2,73,600
4	Bank Balances & Cash in Hand	674,42,621	614,13,339
5	Subscription Accrued	30,83,580	28,15,942
Total Assets		951,50,558	893,80,074

LIABILITIES		2015-16 Amount INR	2014-15 Amount INR
1	Gulhati Memorial Lecture Fund	3,62,618	3,35,603
2	General Fund	488,90,317	513,52,443
3	Gratuity Fund	93,40,742	19,64,010
4	Corpus Fund-WID Prizes	16,44,395	12,18,306
5	Project Funds	2,28,913	26,04,205
6	Security from Tenant	212,30,000	193,10,000
7	Subscription Received in Advance	29,39,243	25,98,300
8	Payables & Provisions	104,96,051	99,16,016
9	Taxes Payable	18,279	81,191
Total Liabilities		951,50,558	893,80,074

Income and Expenditure Account for the year

(Starting from 1 April 2015 to 31 March 2016)

INCOME		2015-16 (Amount INR)	2014-15 (Amount INR)
1	Membership & Subscriptions	211,69,513	184,89,042
2	Sale of Publication	8,30,347	22,08,014
3	Special Contribution to the Budget	20,81,507	125,89,172
4	Interest on Fixed Deposits	46,91,434	30,01,894
5	Other Receipts	44,90,524	20,24,956
6	Rent and Maintenance Charges	399,92,127	385,79,999
7	Closing Stock of Publications	2,41,800	2,73,600
Total Incomes		734,97,252	771,66,677

EXPENDITURE		2015-16 Amount INR	2014-15 Amount INR
1	Opening Stock of Publications	2,73,600	5,10,125
2	Salaries & Allowances	183,22,443	160,09,012
3	Superannuation Relief to Retd. Employees	30,13,507	30,18,191
4	Compensation for Secretary General	33,20,081	28,70,441
5	Professional & Other Service Charges	-	28,83,859
6	Service & Maintenance	52,03,681	23,08,667
7	Renovation & Maintenance Expenses	11,04,185	52,55,938
8	Taxes and Utilities	243,43,110	134,26,755
9	Publication, Printing and Distribution	28,94,876	35,97,299
10	Conference Expenditure	10,89,786	15,05,469
11	Travelling Expenses	21,42,912	6,12,412
12	Depreciation on Fixed Assets	15,92,426	16,76,676
13	Workshop & Training	27,15,261	-
14	Subscription Due written off	1,37,358	6,13,157
15	Excess of Income over Expenditures	73,44,026	228,78,676
Total Expenditures		734,97,252	771,66,677

Acknowledgements

More than 235 professionals from 47 countries contribute to the various Committees, Working Groups, Task Forces, and Work Teams directly. We thank all our members who work voluntarily by devoting their valuable time in promoting the mission of ICID.

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Facts & Figures

World Irrigation & Drainage Data

ICID has been compiling the data about irrigated and drained areas in its member countries based on the information provided by its National Committees. Wherever information from National Committee is not available, the data on irrigated area is taken from FAO-AQUASTAT. ICID is also compiling and updating data on sprinkler and micro irrigated areas in its member countries. Thanks are due to voluntary support of all its National Committees.

World-wide, the area equipped for irrigation is about 318 million ha, while the actual irrigated area is about 300 million ha. The highest share of irrigated area is by emerging/ developing countries (78%), followed by developed countries (16%), and in the least developed countries (6%). On regional basis, the highest irrigated area is in Asia (72%) followed by Americas (15%), Europe (8%), and Africa (5%).

As per the data compiled for 101 countries so far, the total drained area is 203 million ha. Collection of further details like drained area in rainfed and irrigated lands, waterlogged and saline areas in each country is being attempted.

Due to increasing water scarcity, growing shortage and expensive farm labour, sprinkler and micro irrigation is expanding rapidly in many countries. As a result, worldwide, the micro irrigation coverage has increased from 3.0 million ha in 2000 to about 11 million ha in 2013. Presently, the sprinkler irrigation is used on 43 million ha. The micro irrigation is likely to grow faster in coming years, especially in arid and semi-arid countries.

An updated data relating to worldwide irrigated area, sprinkler and micro irrigated, and drained area as compiled by ICID is included as Annex 2.1, Annex 2.2, and Annex 2.3, respectively.

Water, agriculture and food security

Did you know that:

- it takes 1000-3000 litres of water to produce one kilo of rice
- it takes 13000 to 15000 litres of water to produce one kilo of grain-fed beef
- 277 million hectares, about 20 percent of all cropland is under irrigation
- rainfed agriculture is practiced on 80 percent of the arable land
- irrigation multiplies yields of most crops by 2 to 5 times
- irrigated agriculture currently contributes to 40 percent of the world's food production and the remaining 60 percent comes from rainfed systems
- over the period to 2050 world's water will have to support the agricultural systems that will feed and create livelihoods for an additional 2.7 billion people
- rapidly growing demand for meat and milk in urban areas of developing countries will place substantial new demands on agricultural water resources, especially for feed production.

Water footprints

Did you know that we need:

- 13 litres of water of a tomato
- 25 litres of water for a potato
- 35 litres of water of a cup of tea
- 70 litres of water for an apple
- 75 litres of water for a glass of beer
- 120 litres of water for a glass of wine
- 140 litres of water for a cup of coffee
- 170 litres of water of a glass of orange juice
- 184 litres of water for a bag of potato crisps
- 200 litres of water for a glass of milk
- 2400 litres of water for a hamburger
- 16000 litres of water is needed to produce one kilogram of beef.

World Irrigated Area

(Arranged in descending order of the irrigated area)

Sl. No.	Country	Irrigated Area Million ha	Reference Year
DEVELOPED COUNTRIES			
1	USA	24.74	2009 ³
2	Spain	3.605	2014 ¹
3	Japan	2.919	2014 ¹
4	France	2.900	2011 ¹
5	Australia	2.550	2011 ²
6	Italy	2.420	2010 ¹
7	Greece	1.555	2011 ²
8	Romania	1.500	2008 ¹
9	Canada	1.053	2004 ¹
10	New Zealand	0.619	2011 ²
11	Portugal	0.540	2011 ²
12	Germany	0.516	2011 ²
13	Netherlands	0.486	2011 ²
14	Denmark	0.435	2011 ²
15	Hungary	0.208	2004 ¹
16	Sweden	0.164	2011 ²
17	Czech Rep.	0.153	2011 ¹
18	Slovak Republic	0.135	2011 ²
19	Austria	0.117	2011 ²
20	Poland	0.116	2011 ²
21	Bulgaria	0.102	2011 ²
22	Ireland	0.100	2010 ¹
23	Norway	0.090	2011 ²
24	UK	0.084	2010 ¹
25	Finland	0.080	2009 ¹
26	Cyprus	0.046	2011 ²
27	Switzerland	0.040	2007 ¹
28	Belgium	0.023	2011 ²
29	Slovenia	0.007	2011 ¹
30	Lithuania	0.004	2011 ¹
31	Malta	0.003	2011 ²
32	Latvia	0.001	2011 ²
Sub-Total		47.311	

EMERGING/DEVELOPING COUNTRIES			
1	India	62.000	2010 ¹
2	China	60.004	2010 ¹
3	Pakistan	19.080	2013 ¹
4	Iran	8.570	2015 ¹
5	Indonesia	6.722	2011 ²
6	Mexico	6.500	2011 ²
7	Turkey	5.730	2012 ¹
8	Thailand	4.736	2011 ¹
9	Viet Nam	4.600	2011 ²
10	Russia	4.500	2007 ¹
11	Brazil	4.453	2006 ¹
12	Uzbekistan	4.260	2014 ¹
13	Egypt	3.670	2011 ²
14	Iraq	3.525	2011 ²

Sl. No.	Country	Irrigated Area Million ha	Reference Year
15	Ukraine	2.180	2013 ⁴
16	Kazakhstan	2.122	2007 ¹
17	Turkmenistan	1.869	2013 ¹
18	Saudi Arabia	1.731	2011 ²
19	Argentina	1.650	2011 ²
20	South Africa	1.600	2007 ¹
21	Phillipines	1.520	2008 ¹
22	Korea, DP Rep	1.460	2011 ²
23	Morocco	1.458	2011 ²
24	Azerbaijan	1.430	2013 ¹
25	Syria	1.399	2011 ²
26	Peru	1.196	2011 ²
27	Chile	1.090	2007 ¹
28	Colombia	1.087	2011 ²
29	Venezuela	1.055	2011 ²
30	Kyrgystan	1.020	2011 ²
31	Korea Rep.	1.010	2009 ¹
32	Ecuador	1.000	2011 ²
33	Cuba	0.870	2011 ²
34	Tajikistan	0.804	2013 ¹
35	Algeria	0.570	2011 ²
36	Sri Lanka	0.570	2011 ²
37	Libya	0.470	2011 ²
38	Tunisia	0.459	2011 ²
38	Georgia	0.433	2011 ²
40	Malaysia	0.385	2009 ¹
41	Chinese Taipei	0.380	2009 ¹
42	Albania	0.331	2011 ²
43	Guatemala	0.315	2011 ²
44	Dominican Rep.	0.307	2011 ²
45	Nigeria	0.293	2011 ²
46	Moldova Rep.	0.228	2011 ²
47	Israel	0.225	2011 ²
48	Uruguay	0.218	2011 ²
49	Bolivia	0.175	2011 ²
50	Zimbabwe	0.174	2011 ²
51	Guyana	0.150	2011 ²
52	Belarus	0.131	2011 ²
53	Macedonia	0.128	2011 ²
54	Costa Rica	0.108	2011 ²
55	Kenya	0.103	2011 ²
56	Jordan	0.096	2011 ²
57	Serbia, Republic of	0.092	2011 ²
58	United Arab Emirates	0.092	2011 ²
59	Lebanon	0.090	2011 ²
60	Honduras	0.088	2011 ²
61	Mongolia	0.084	2011 ²
62	Ivory Coast	0.073	2011 ²
63	Paraguay	0.067	2011 ²
64	Nicaragua	0.061	2011 ²

Sl. No.	Country	Irrigated Area Million ha	Reference Year
65	Oman	0.059	2011 ²
66	Surinam	0.057	2011 ²
67	Swaziland	0.050	2011 ²
68	El Salvador	0.045	2011 ²
69	Panama	0.043	2011 ²
70	Ghana	0.034	2011 ²
71	Cameroon	0.029	2011 ²
72	Jamaica	0.025	2011 ²
73	Croatia	0.024	2011 ²
74	Puerto Rico	0.022	2011 ²
75	Mauritius	0.021	2011 ²
76	Qatar	0.013	2011 ²
77	Benin	0.012	2011 ²
78	Kuwait	0.010	2011 ²
79	Newcaledonia	0.010	2011 ²
80	Namibia	0.008	2011 ²
81	Trinidad and Tobago	0.007	2011 ²
82	Fr Guiana	0.006	2011 ²
83	Guadeloupe	0.006	2011 ²
84	Martinique	0.006	2011 ²
85	Barbados	0.005	2011 ²
86	Bahrain	0.004	2011 ²
87	Belize	0.004	2011 ²
88	Gabon	0.004	2011 ²
89	Bosnia & Herzegovina	0.003	2011 ²
90	Cape Verde	0.003	2011 ²
91	Estonia	0.003	2016 ¹
92	Fiji Island	0.003	2011 ²
93	St. Lucia	0.003	2011 ²
94	Botswana	0.002	2011 ²
95	China, H.Kong	0.002	2011 ²
96	Congo, Rep.	0.002	2011 ²
97	Bahmas	0.001	2011 ²
98	Brunei Darssm	0.001	2011 ²
99	Fr Polynesia	0.001	2011 ²
100	St. Vincent	0.001	2011 ²
Sub-Total		233.326	

LEAST DEVELOPED COUNTRIES

1	Bangladesh	5.217	2010 ¹
2	Afghanistan	3.208	2011 ²
3	Myanmar	2.292	2011 ²
4	Sudan	1.890	2011 ²
5	Nepal	1.180	2012 ¹
6	Madagascar	1.086	2011 ²
7	Yemen	0.680	2011 ²
8	Ethiopia	0.539	2005 ¹
9	Cambodia	0.354	2011 ²
10	Lao People DR	0.310	2011 ²
11	Mali	0.236	2011 ²
12	Somalia	0.200	2011 ²
13	Tanzania	0.184	2011 ²
14	Zambia	0.156	2011 ²
15	Senegal	0.120	2011 ²
16	Mozambique	0.118	2011 ²

Sl. No.	Country	Irrigated Area Million ha	Reference Year
17	Haiti	0.097	2011 ²
18	Angola	0.086	2011 ²
19	Malawi	0.074	2011 ²
20	Niger	0.074	2011 ²
21	Mauritania	0.045	2011 ²
22	Bhutan	0.032	2011 ²
23	Burkina Faso	0.040	2015 ¹
24	Chad	0.030	2011 ²
25	Sierra Leone	0.030	2011 ²
26	Guineabissau	0.025	2011 ²
27	Burundi	0.023	2011 ²
28	Eritrea	0.021	2011 ²
29	Uganda	0.014	2011 ²
30	Sao-Tome Prn.	0.010	2011 ²
31	Rwanda	0.009	2011 ²
32	Togo	0.007	2011 ²
33	Gambia	0.005	2011 ²
34	Lesotho	0.003	2011 ²
35	Liberia	0.003	2011 ²
36	Congo, Dem. R.	0.002	2011 ²
37	Djibouti	0.001	2011 ²
Sub-Total		18.401	
TOTAL		299.038	

SUMMARY

A. Country Category

Sl. No.	Region	Irrigated Area Million ha	% of Irrigated Area
1.	Developed Countries	47.31	15.8
2.	Emerging/ Developing Countries	233.33	78
3.	Least Developed Countries	18.40	6.2
TOTAL		299.04	100.0

B. Region-wise

Sl. No.	Region	Irrigated Area Million ha	% of Irrigated Area
1.	Africa	14.74	4.9
2.	Americas	46.51	15.6
3.	Asia and Oceania	214.41	71.7
4.	Europe	23.38	7.8
TOTAL		299.04	100.0

Notes: ¹ ICID data; ² FAO data (FAO Stat – FAO Statistics Division 2014); ³ USGS – Estimated Use of Water in the United States in 2005; **Bold:** Active NCs; **Italic:** Inactive NCs;

⁴ Report – Land with Irrigated Network, Ukraine, 2013; and Country Classification – World Economic Situation and Prospects (WESP), United Nations, 2012



Sprinkler and Micro Irrigated Area

(Arranged in descending order of the total sprinkler and micro irrigated area)

Sl. No.	Country	Total irrigated area	Sprinkler irrigation	Micro Irrigation	Total sprinkler and micro-irrigation	% of Total irrigated area	Year of reporting
		(Mha)	Hectares				
1	USA	24.7	123,48,178	16,39,676	139,87,854	56.5	2009
2	India	60.9	30,44,940	18,97,280	49,42,220	8.1	2010
3	China	59.3	29,26,710	16,69,270	45,95,980	7.8	2009
4	Brazil	5.80	38,57,104	6,21,346	44,78,450	77.3	2013
5	Spain	3.64	8,85,000	17,93,000	26,78,000	73.7	2015
6	Russia	4.5	25,00,000	47,000	25,47,000	56.6	2012
7	Ukraine	2.2	24,50,000	52,000	25,02,000	113.7	2013
8	France	2.9	13,79,800	1,03,300	14,83,100	51.1	2011
9	Kazakhstan, Rep. of	1.2	14,00,000	17,000	14,17,000	118.1	2013
10	Iran	8.57	8,02,000	5,94,000	13,96,000	16.3	2015
11	Italy	2.42	9,58,535	4,22,534	13,81,069	57.1	2013
12	South Africa	1.67	9,20,059	3,65,342	12,85,401	77.0	2007
13	Turkey	5.73	6,80,000	3,40,000	10,20,000	17.8	2012
14	Saudi Arabia	1.62	7,16,000	1,98,000	9,14,000	56.4	2004
15	Australia	2.38	6,90,200	2,14,200	9,04,400	38.0	2005
16	Canada	1.053	6,83,029	6,034	6,89,063	65.4	2004
17	Azerbaijan	1.433	6,10,000	100	6,10,100	42.6	2013
18	Korea, Rep. of	1.010	2,00,000	4,00,000	6,00,000	59.4	2009
19	Mexico	6.2	4,00,000	2,00,000	6,00,000	9.7	1999
20	Egypt	3.42	4,50,000	1,04,000	5,54,000	16.2	2000
21	Germany	0.54	5,25,000	5,000	5,30,000	98.1	2005
22	Japan	2.92	4,30,000	60,000	4,90,000	16.8	2014
23	Romania	1.5	4,48,000	4,000	4,52,000	30.1	2008
24	Slovak Rep.	0.313	3,10,000	2,650	3,12,650	99.9	2000
25	Israel	0.231	60,000	1,70,000	2,30,000	99.6	2000
26	Morocco	1.65	1,89,750	8,250	1,98,000	12.0	2003
27	Hungary	0.22	1,85,000	7,000	1,92,000	87.3	2008
28	Moldova	0.228	1,45,000	15,000	1,60,000	70.2	2012
29	Syria	1.28	93,000	62,000	1,55,000	12.1	2000
30	Austria	0.117	1,17,000	20,000	1,37,000	117.1	2011
31	UK	0.11	1,05,000	6,000	1,11,000	100.9	2005
32	Finland	0.07	60,000	10,000	70,000	100.0	2010
33	Portugal	0.63	40,000	25,000	65,000	10.3	1999
34	Malawi	0.055	43,193	5,450	48,643	88.4	2000
35	Sudan	1.89	42,000	-	42,000	2.2	2012
36	Chile	1.09	16,000	23,000	39,000	3.6	2006
37	Chinese Taipei	0.38	18,850	8,750	27,600	7.3	2009
38	Bulgaria	0.588	21,000	3,000	24,000	4.1	2008
39	Czech Rep.	0.153	11,000	5,000	16,000	10.5	2007
40	Philippines	1.52	7,175	6,635	13,810	0.9	2004
41	Poland	0.1	5,000	8,000	13,000	13.0	2008
42	Slovenia	0.0073	8,072	733	8,805	121.0	2009
43	Uzbekistan	4.26	5,000	2,000	7,000	0.2	2014

Sl. No.	Country	Total irrigated area	Sprinkler irrigation	Micro irrigation	Total sprinkler and micro-irrigation	% of Total irrigated area	Year of reporting
		(Mha)	Hectares				
44	Malaysia	0.38	2,000	5,000	7,000	1.8	2009
45	Macedonia	0.055	5,000	1,000	6,000	10.9	2008
46	Nepal	1.18	-	-	5,000	0.4	2012
47	Burkina Faso	0.04	4,500	280	4,780	12.0	2015
48	Lithuania	0.0044	4,463	-	4,463	101.4	2010
49	Estonia	0.003	100	500	600	20.0	2016
50	Iraq	3.52	-	-	159	0.0	2012
Total		225.66	408,02,658	111,48,330	519,56,147	23.0	

DEVELOPED COUNTRIES

1	USA	24.74	123,48,178	16,39,676	139,87,854	57	2009
2	Spain	3.64	8,85,000	17,93,000	26,78,000	74	2015
3	France	2.90	13,79,800	1,03,300	14,83,100	51	2011
4	Italy	2.42	9,58,535	4,22,534	13,81,069	57	2013
5	Australia	2.38	6,90,200	2,14,200	9,04,400	38	2005
6	Canada	1.05	6,83,029	6,034	6,89,063	65	2004
7	Germany	0.54	5,25,000	5,000	5,30,000	98	2005
8	Japan	2.92	4,30,000	60,000	4,90,000	17	2014
9	Romania	1.50	4,48,000	4,000	4,52,000	30	2008
10	Slovak Rep.	0.31	3,10,000	2,650	3,12,650	100	2000
11	Hungary	0.22	1,85,000	7,000	1,92,000	87	2008
12	Austria	0.12	1,17,000	20,000	1,37,000	117	2011
13	UK	0.11	1,05,000	6,000	1,11,000	101	2005
14	Finland	0.07	60,000	10,000	70,000	100	2010
15	Portugal	0.63	40,000	25,000	65,000	10	1999
16	Bulgaria	0.59	21,000	3,000	24,000	4	2008
17	Czech Rep.	0.15	11,000	5,000	16,000	10	2007
18	Poland	0.10	5,000	8,000	13,000	13	2008
19	Slovenia	0.01	8,072	733	8,805	121	2009
20	Lithuania	0.00	4,463	-	4,463	101	2010
21	Estonia	0.00	100	500	600	20	2016
Sub-total		44.40	192,14,377	43,35,627	235,50,004	53	

EMERGING/DEVELOPING COUNTRIES

1	India	60.85	30,44,940	18,97,280	49,42,220	8	2010
2	China	59.30	29,26,710	16,69,270	45,95,980	8	2009
3	Brazil	5.80	38,57,104	6,21,346	44,78,450	77	2013
4	Russia	4.50	25,00,000	47,000	25,47,000	57	2012
5	Ukraine	2.20	24,50,000	52,000	25,02,000	114	2013
6	Kazakhstan, Rep.	1.20	14,00,000	17,000	14,17,000	118	2013
7	Iran	8.57	8,02,000	5,94,000	13,96,000	16	2015
8	South Africa	1.67	9,20,059	3,65,342	12,85,401	77	2007
9	Turkey	5.73	6,80,000	3,40,000	10,20,000	18	2012
10	Saudi Arabia	1.62	7,16,000	1,98,000	9,14,000	56	2004
11	Azerbaijan	1.43	6,10,000	100	6,10,100	43	2013
12	Mexico	6.20	4,00,000	2,00,000	6,00,000	10	1999
13	Korea	1.01	2,00,000	4,00,000	6,00,000	59	2009

Sl. No.	Country	Total irrigated area	Sprinkler irrigation	Micro irrigation	Total sprinkler and micro-irrigation	% of Total irrigated area	Year of reporting
		(Mha)	Hectares				
14	Egypt	3.42	4,50,000	1,04,000	5,54,000	16	2000
15	Israel	0.23	60,000	1,70,000	2,30,000	100	2000
16	Morocco	1.65	1,89,750	8,250	1,98,000	12	2003
17	Moldova	0.23	1,45,000	15,000	1,60,000	70	2012
18	Syria	1.28	93,000	62,000	1,55,000	12	2000
19	Chile	1.09	16,000	23,000	39,000	4	2006
20	Chinese Taipei	0.38	18,850	8,750	27,600	7	2009
21	Philippines	1.52	7,175	6,635	13,810	1	2004
22	Uzbekistan	4.26	5,000	2,000	7,000	0	2014
23	Malaysia	0.38	2,000	5,000	7,000	2	2009
24	Macedonia	0.06	5,000	1,000	6,000	11	2008
25	Iraq	3.52	-	-	159	0	2012
Sub-total		178.09	214,98,588	68,06,973	283,05,720	16	

LEAST DEVELOPED COUNTRIES

1	Malawi	0.055	43,193	5,450	48,643	88	2000
2	Sudan	1.89	42,000	-	42,000	2.2	2012
3	Nepal	1.18	-	-	5,000	0	2012
4	Burkina Faso	0.04	4,500	280	4,780	12	2015
Sub-total		3.165	89,693	5,730	1,00,423	3	

Summary

REGIONWISE

Sl. No.	Country	Total irrigated area	Sprinkler irrigation	Micro irrigation	Total sprinkler and micro irrigation	% of total irrigated area	% of Sprinkler irrigation	% of Micro irrigation	% of Total sprinkler and micro irrigation
		(Mha)	(Mha)						
1	Africa	8.73	16,49,502	4,83,322	21,32,824	24.4	4.0	4.3	4.1
2	Americas	38.88	173,04,311	24,90,056	197,94,367	50.9	42.4	22.3	38.1
3	Asia and Oceania	157.76	116,85,875	56,44,235	173,35,269	11.0	28.6	50.6	33.4
4	Europe	20.29	101,62,970	25,30,717	126,93,687	62.5	24.9	22.7	24.4
Total		225.66	408,02,658	111,48,330	519,56,147	23.0	100.0	100.0	100.0

COUNTRY CATEGORY

1	Developed Countries	44.4	192,14,377	43,35,627	235,50,004	53.0	47.1	38.9	45.3
2	Emerging/ Developing Countries	178.1	214,98,588	68,06,973	283,05,720	15.9	52.7	61.1	54.5
3	Least Developed Countries	3.165	89,693	5,730	1,00,423	23.0	0.2	0.1	0.2
Total		225.66	408,02,658	111,48,330	519,56,147	23.0	100.0	100.0	100.0



World Drained Area

Sl. No.	Country	Arable land and permanent crops (million ha)	Total drained area (million ha)	% drained area	Reference year
DEVELOPED COUNTRIES					
1	Australia	44.37	2.17	4.89	2002 ²
2	Austria	1.44	0.2	13.89	1997 ²
3	Belgium	0.87	0.07	8.05	1996 ²
4	Bulgaria	3.25	0.08	2.46	2000 ²
5	Canada	67.5	9.46	14.01	2002 ²
6	Cyprus	0.11	0.02	18.18	2000 ²
7	Czech Rep.	3.26	1.07	32.82	2011 ¹
8	Denmark	2.35	1.77	50.00	2012 ¹
9	Estonia	1.30	0.64	49.23	2016 ¹
10	Finland	2.26	2.5	110.62	2008 ¹
11	France	19.33	3.00	15.52	2011 ¹
12	Germany	12.13	4.9	40.40	1993 ²
13	Greece	3.23	0.52	16.10	2002 ²
14	Hungary	4.8	2.3	47.92	2003 ¹
15	Ireland ⁴	1.06	0.254	23.96	2010 ¹
16	Italy	13.2	5.3	40.15	2005 ¹
17	Japan	4.54	3.52	77.53	2013 ¹
18	Latvia	1.18	1.58	133.90	1995 ²
19	Lithuania ⁵	2.68	2.58	96.27	2011 ¹
20	Netherlands ⁶	1.09	3.0	275.23	2010 ¹
21	Norwegian	1.02	0.61	60	2012 ¹
22	Poland	12.97	4.21	32.46	1999 ²
23	Portugal	1.64	0.04	2.44	2002 ²
24	Romania	9.85	1.83	18.58	2008 ¹
25	Slovak Republic	1.41	0.6	42.55	1997 ²
26	Slovenia	0.2	0.08	40.00	2007 ¹
27	Spain	24.90	0.3	1.205	2014 ²
28	Sweden	2.64	1.1	41.67	1996 ²
29	Switzerland	0.43	0.16	37.21	2002 ²
30	UK	6.05	4.65	76.86	1996 ²
31	USA	173.2	47.5	27.42	1987 ²
	Sub-Total	424.3	106.014	24.98	
EMERGING/DEVELOPING COUNTRIES					
32	Albania	0.7	0.28	40.00	1999 ²
33	Algeria	8.42	0.06	0.71	1999 ²
34	Argentina	33.0	0.13	0.40	2002 ²
35	Azerbaijan	2.09	0.61	0.29	2013 ¹
36	Belarus	5.64	3.0	53.19	1993 ²
37	Bolivia	3.82	0.02	0.52	2000 ²
38	Brazil	66.9	1.08	1.61	2013 ¹
39	Chile	0.78	0.035	4.49	2006 ¹
40	China	130.03	21.14	16.26	2008 ¹
41	Chinese Taipei	0.80	0.13	16.25	2012 ¹
42	Colombia	3.46	0.23	6.65	1989 ²
43	Costa Rica	0.5	0.04	8.00	1999 ²
44	Croatia	0.95	0.76	80.00	1990 ²
45	Cuba	3.97	0.33	8.31	1997 ²
46	Dominican Rep.	1.30	0.03	2.31	2000 ²
47	Ecuador	2.50	0.05	2.0	1998 ²
48	Egypt [†]	3.54	3.36	85.31	2011 ³
49	El Salvador	0.92	0.01	1.09	1997 ²
50	Fiji	0.25	0.01	4.00	2000 ²
51	Georgia	0.58	0.16	27.59	1996 ²
52	Guyana	0.45	0.15	33.33	1991 ²
53	Honduras	1.43	0.06	4.20	1991 ²
54	India	169.32	5.8	3.43	1991 ²
55	Indonesia	37.10	3.35	9.03	1990 ²
56	Iran	14.8	0.28	1.89	2015 ¹
57	Iraq	5.45	1.54	28.26	2002 ²
58	Israel	0.38	0.1	26.32	1987 ²
59	Jordan	0.15	0.01	6.67	2008 ³
60	Kazakhstan	22.8	0.45	1.97	2013 ¹
61	Kenya	5.8	0.03	0.52	2003 ²
62	Korea Rep.	1.82	1.15	63.19	2007 ¹
63	Kyrgyzstan	1.35	0.20	14.81	2013 ¹
64	Lebanon	0.29	0.01	3.45	2001 ²
65	Libya	2.05	0.01	0.49	2000 ²
66	Malaysia	9.5	6.0	63.16	2009 ¹
67	Mexico	27.50	5.2	18.91	1997 ²
68	Mongolia	0.85	1.5	176.47	2000 ²
69	Morocco	8.98	0.65	7.24	2004 ²
70	Pakistan	30.40	7.86	25.85	2013 ¹
71	Paraguay	4.3	0.01	0.23	2000 ²
72	Peru	4.44	0.08	1.80	2000 ²
73	Philippines	9.16	2.72	29.69	2008 ¹
74	Puerto Rico	0.1	0.02	20.00	2000 ²
75	Russia	192.6	4.78	2.48	2007 ¹
76	Saudi Arabia	3.68	0.04	1.09	1992 ²
77	Serbia & Montenegro	3.72	0.4	10.75	2000 ²
78	South Africa	18.00	0.06	0.41	2011 ¹
79	Sri Lanka	2.20	0.03	1.36	1967 ²
80	Surinam	0.06	0.05	83.33	1998 ²
81	Syria	5.68	0.27	4.75	1993 ²
82	Tajikistan	0.87	0.33	37.93	2013 ¹
83	Thailand	18.85	0.16	0.85	1997 ²
84	Tunisia	5.04	0.2	3.97	2000 ²
85	Turkey	26.01	3.43	13.19	2012 ¹
86	Turkmenistan	1.92	1.1	57.29	2013 ¹
87	Ukraine	33.5	3.3	9.85	2013 ¹
88	Uzbekistan	4.7	3.3	70.21	2014 ¹
89	Venezuela	3.35	0.31	9.25	2002 ²
90	Viet Nam	9.42	1.0	10.62	1994 ²
91	Zimbabwe	11.00	0.1	0.90	2011 ¹
	Sub-Total	969.17	87.505	9.03	
LEAST DEVELOPED COUNTRIES					
92	Afghanistan	7.91	0.01	0.13	2000 ²
93	Bangladesh	8.70	1.5	17.24	1993 ²
94	Ethiopia	14.51	0.03	0.21	1987 ²
95	Madagascar	3.55	0.11	3.10	2000 ²
96	Malawi	7.7	NA	-	2002 ¹
97	Myanmar	11.70	0.19	1.62	1994 ²
98	Nepal	2.47	0.09	3.64	2000 ²
99	Rwanda	1.57	0.09	5.73	2000 ²
100	Sudan	20.91	0.56	2.68	2000 ²
101	Yemen	1.61	1.5	93.17	2000 ²
	Sub-Total	80.63	4.08	5.06	

[†]Countries shown in bold are active members of ICID

Summary⁷

Type of Country				
Sl. No.	Region	Arable land and permanent crops (million ha)	Total drained area (million ha)	% drained area
1	Developed Countries	424.3	106.014	24.98
2	Emerging/Developing Countries	969.17	87.505	9.03
3	Least Developed Countries	80.63	4.08	5.06
Total (101 countries)		1474.1	197.6	13.40
World		1552.98	202.9	13.06

Regionwise				
Sl. No.	Region	Arable land and permanent crops (million ha)	Total drained area (million ha)	% drained area
1	Africa	112.06	5.82	5.19
2	Americas	399.48	64.80	16.22
3	Asia	589.37	72.14	12.24
4	Europe	373.19	54.84	14.69
Total (101 countries)		1474.1	197.6	13.40
World		1552.98	202.9	13.06

Notes: 1 ICID data (both for arable land and permanent crop (APC) and for drained areas)

2 CEMAGREF data (for drained area)

3 Monitoring and Evaluation Department (EPADP), Egypt, 2011

4 The total drained area in Ireland is 0.254 million ha, the total utilised agricultural area is 4.02 million ha. Apart from a very small area of Ireland that is irrigated on a commercial basis for crop production there are no major irrigation schemes in Ireland. Suggested figure for irrigated area in Ireland is 10,000 hectares. Source: Dr. Oliver Nicholson, Chairman, Irish National Committee on Irrigation and Drainage (IRCID), 28 June 2010

5 Statistics referred as "arable land" in Lithuanian registry as per 01.01.2010. The drained area slightly decreased as some of the area excluded from registry since that area has been completely depreciated and drainage no more functioning. Source: Prof. dr. Antanas Maziliauskas, President of Lithuanian National Committee (LICID), 26 June 2010.

6 The fact that the drained area is more than the APC area is a matter of definition. In the Netherlands' case the drained area includes areas with other functions such as drainage of meadows and urban areas. Source: Dr. Pol (A.L.) Hakstege, Secretary/ Treasurer, Netherlands National Committee (NETHCID), 2 July 2010.

7 Country Classification - World Economic Situation and Prospects (WESP), United Nations, 2012



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