

**AGENDA FOR THE 6TH MEETING OF THE
WORKING GROUP ON CLIMATE CHANGE AND
AGRICULTURAL WATER MANAGEMENT (WG-CLIMATE)**

27 November 2021, 14:00-15:45 hours (Session I) and 16:15-18:00 hours (Session II)
Marrakesh, Morocco

Strategy Theme: Basin

Presented by the Chairman

Year of Establishment: 2015

Extended the completion of the Mandate: 2021

Mandate: (a) To share the information about prediction of the global and regional climate change and climate variability; (b) To explore and analyse the implications of climate change and climate variability for agricultural water management including irrigation, drainage, and flood control; (c) To promote archiving useful information and case studies on climate change for practical use in improved impact assessment and adaptation development; (d) 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 (e) To join the international dialogue on Climate change and water management.

Website: https://icid-ciid.org/inner_page/111

WG-CLIMATE Agenda Item 1: Action taken report by Chair¹

1. The Chair will present the report on the actions taken on the decisions and proposals of the working group at its last meeting.
2. The Indian National Committee on Irrigation and Drainage (INCID) has nominated - Mr. Sunil Kumar, Dr. Man Singh, Dr. Ashish Pandey (India) while the Nepal National Committee of ICID (NENCID) has nominated Mr. Tikaram Baral (Nepal) for the membership of the working group. During the virtual meeting of WG-CLIMATE held on 11 August 2021, Prof. Ashish Pandey (India) and Mr. Tikaram Baral (Nepal) have introduced themselves and WG accepted them as member of the group. In September 2021, Chinese National Committee (CNCID) has nominated Dr. Jiabin Wu, Dr. Xu Lei, and Ms. Linlin Fan – Young Professional (China) for the membership of the group.
3. Chair in consultation with Vice Chair, Secretary of the WG and the Central Office have updated the membership of the WG as given at **Annex 1** (*refer electronic version for latest list*). New nominations, if any, for the membership received will be dealt suitably after the meeting.

WG-CLIMATE Agenda Item 2: Brief of the virtual meeting organized in August 2021

4. During the second monthly meeting on 7 June 2021, ICID President Dr. Ragab Ragab (UK) discussed various activities of the ICID. During the virtual meeting, President Dr. Ragab has suggested ICID Central Office to contact the Chair/ Vice Chair/ Secretary of the working group and to request them to organize at least two virtual meetings in a year apart from the physical meetings organized during the annual IEC meetings of ICID. Accordingly, ICID Central Office has communicated with the Chair/ Vice Chair and Secretary to organize virtual meeting.
5. The first virtual zoom meeting of WG-CLIMATE was organized on 11 August 2021 wherein fifteen members participated in the meeting. During the meeting, Chair discussed various activities being undertaken by the WG as part of Road Map to ICID Vision 2030, publication of the WG, scoping document for the establishment of new WG etc. Minutes of the virtual meetings of all work body have been uploaded on a dedicated webpage - "[ICID Workbodies Virtual Meeting](#)".

WG-CLIMATE Agenda Item 3: Road Map to ICID Vision 2030 – Status of activities on climate change and agricultural water management

6. The Chair presented the report on the action taken on the decisions and proposals of the working group at its last meeting held in October 2020. The group reconsidered the Action Plan on the Road Map to ICID Vision 2030, modified it and confirmed the expected activities for the Goal B and D of the WG under the Action Plan (**Annex 2**). The group briefly reviewed the minutes of 2020 virtual meeting and recognized the importance of the work on climate change with a mention of the recently published AR6 by IPCC.

¹ This will also include details of membership of WG as **Annex**

7. During the virtual meeting in August 2021, Dr. Ragab Ragab, President of ICID (UK) suggested that the Chair of the WG-CLIMATE to prepare some material as early as possible for the ICID News about the UN IPCC Climate Report published on August 9, 2021, and how ICID will address the issues raised in the report. Accordingly, Chair Dr. Ray Shyan Wu prepared and shared the article titled “The emphasis on agricultural water management in the IPCC Climate Report 2021 and the role of the ICID” for dissemination through ICID News. Central Office published the article in the ICID News which is accessible at <https://icid-ciid.org/member/news>

WG-CLIMATE Agenda Item 3.1: Publication of the outcomes of the WG

8. During the meeting in October 2020, all the WG members were invited to contribute to the publication. The document is expected to consist of five chapters. Chair Dr. Ray Shyan Wu suggested that the editing work of the publication be arranged as follows: – (a) Prof. Sue Walker was assigned to be the responsible editor to Chapter 1, (b) Dr. Nozar Ghahreman was responsible for Chapter 2, (c) Dr. Waleed Hassan for Chapter 3, (d) Dr. Jih-Shun Liu for Chapter 4, and (e) Chapter 5 would be the conclusion and will be written when all the previous chapters are finished. It was agreed that one new chapter of collecting the regional/ community case studies will be added to the document and all the WG members were requested to make their contribution. Each paper of case study will be of 3 to 5 pages.

9. In April 2021, Chair sent the guidelines to all members and requested them for more attribution. In June 2021, Central Office once again requested all members to contribute a case study for the publication. During the virtual meeting in August 2021, after discussion, the group noted that experts’ review was also needed. However, as there was little progress on the publication, the group reviewed the table of contents of the publication and suggested a change of plan. After discussion during the virtual meeting in August 2021, it was proposed that a final output will still be presented, whether in the form of book and/or other publications such as a review paper or case study to be published in a Journal. Many members offered to contribute but suggested that a settled framework and timeline will be necessary. It was proposed that every member should be responsible for the task and a certain delivery. Table of contents of the publication is shown as **Annex 3**.

WG-CLIMATE Agenda Item 4: Exchange of information, knowledge & networking

WG-CLIMATE Agenda Item 4.1: Website of the WG

10. During the virtual meeting, the group noted that Dr. Fuqiang Tian, the head of the WG Website Managing Team, had shared members CVs, group photos, workshop materials, publications for uploading on WG website. Chair Dr. Wu thanked Dr. Tian for his efforts and asked him to continue the work of improving the WG website. Chair also encouraged members to share their ideas about the website and give feedback to Dr. Tian. In March 2021, Dr. Fuqiang Tian has shared the following materials/ articles for uploading on the WG website:

- (a) Current status and recent trend of irrigation water use in China by Songjun Han, Fuqiang Tian, and Long Gao
- (b) Supply and Demand Forecasting of Water Resource Coupling System in Upstream Yangtze River under Changing Environmental Conditions by Sijing Lou, et. al.
- (c) Definition and Application of a Computational Parameter for the Quantitative Production of Hydroponic Tomatoes Based on Artificial Neural Networks and Digital Image Processing by Diego Palacios, et.al.
- (d) How cutting-edge technology can sustain Africa food security-Abdella by Maduka Nweke
- (e) Global Warming Could Make Life in Tropics Impossible by Amy Norton Health

11. Central Office uploaded all the materials on WG website which is accessible at - https://icid-ciid.org/inner_page/111. Members are encouraged to share interesting articles/ documents/ reports/ presentations related to the mandate of the group for uploading on WG website.

WG-CLIMATE Agenda Item 4.2: Webinar/ Web based seminar

12. Webinar/ Web-based seminars are the new way to reach wider audience through video conferencing. Members are requested to take a lead in organizing Webinars in consultation with Central Office. Members can also invite specialists to deliver talks on important topics of interest. Members may decide the broad topics and a tentative schedule to organize these Webinar.

WG-CLIMATE Agenda Item 5: Updating Multilingual Technical Dictionary (MTD)

13. During the virtual meeting, the group noted the progress of updating Multilingual Technical Dictionary (MTD) shared by Dr. Waleed Hassan Abou El Hassan, the team leader for MTD. Dr. Waleed Hassan requested all WG members to review the final draft and provide their comments/ feedback. Dr. Watanabe appreciated the enthusiastic and careful work of the team for MTD lead by Dr. Waleed Hassan. Dr. Watanabe had requested the MTD team to

show its implication in comparison with the glossaries or dictionaries edited by other organizations like IPCC and UNESCO.

14. During last meeting of the WG, Dr. Hassan informed the group that he has been working on the draft of the MTD and will share the final version to TF-MTD after compilation of feedback/comments from WG members. In January 2021, Central Office requested Dr. Hassan to share the latest/ updated version of MTD to all members for their comments. Dr. Hassan will provide further updates at the meeting.

WG-CLIMATE Agenda Item 6: Expected performance in the WWF9

15. The 9th World Water Forum (WWF9) is planned to be held during 21-26 March 2022 in Dakar, Senegal. ICID has set up TF-WWF9 under chairmanship of PH Dr. Saeed Nairizi for finalising ICID contribution to WWF9. The WG Chair may discuss with the members about possible contribution of the WG on the climate-change related activities of ICID for reporting to TF-WWF9 for further action.

WG-CLIMATE Agenda Item 7: Work Plan and Scoping Document for the establishment of new group

16. As the present tenure and mandate of the WG comes to closure in 2021, WG decided to propose a new WG. The current mandate was submitted by Dr. Watanabe (*the then WG Chair*) in 2015 and Dr. Wu appreciated for his efforts. During the virtual meeting in August 2021, the group discussed and reviewed the draft Scoping Document of WG-CLIMATE prepared by the Chair in consultation with Vice Chair and Secretary. After discussion with the members and in order to differentiate WG-CLIMATE from other WGs with similar names, the group decided to name the new WG as “Agriculture Water Management under Changing Climate”. However, due to the delay of the publication, the timeline of the WG needs to be reconsidered. The Chair welcomes any suggestion on the document and will decide if the group applies for one-year extension or submits the proposal of the new WG to the IEC by the end of the year. Scoping Document of the new WG on “Agriculture Water Management under Changing Climate” is given as **Annex 4**. Chair will provide further updates at the meeting.

WG-CLIMATE Agenda Item 8: Any other business

19. **ICID Members' Profile Section:** As a new initiative, ICID has launched a new website (<https://icid-ciid.org>) as part of ICID's 70th Anniversary Celebration to meet the new web technologies. One of the newly added web features provides WG members access to their profile section using their dedicated account. ICID CO vide email dated 9 July 2021 < <https://icid.bmeurl.co/C7D4D2E> > informed all members on how to access their account and change their password to maintain accuracy. Members are requested to review and update their information using their credentials and help us to maintain accurate information.

20. **Register on World Irrigation Projects (WIP):** ICID has taken an initiative to document the development of irrigation projects in the world by establishing an online Register on “World Irrigation Projects (WIP)”. WIP will fulfill the need for a much-awaited global repository of information in systematic irrigation and agricultural water management. Irrigation projects having 5000 Hectares and above of Gross Command Area can submit their information for inclusion in the register. The irrigation projects approved by National Committee/ ICID Central Office for inclusion are entitled to Certification. Members are also requested to encourage all irrigation project owners, managers, and researchers across the world and especially in our member countries for contributing to the register. This facility is also extended to non-member countries if the information is received from an authorized agency. The review process and other details are outlined on the portal < <https://wip.icidevents.org/> > in detail.



NOTES FOR CHAIRPERSON:

1. Draft minutes of this meeting to be submitted to ICID Secretariat at Marrakesh, Morocco after the meeting.
2. Chair to participate and present the WG report to PCTA meeting on 29 November 2021.

A. Members and their attendance at 2019 and 2020 meetings

Sl. No.	Members	Member from (Year)	2019		2020		Remarks
			Self	Contributed by mail	Self	Contributed by mail	
1.	Dr. Ray Shyan Wu, Chairman, 2020 (Chinese Taipei Committee)	2015	•	•	•	•	
2.	Dr. Tian Fuqiang, Vice Chair, 2020 (China)	2015	•	•		•	
3.	Dr. Waleed Hassan M. Abou El Hassan, Secretary, 2020 (Egypt)	2015		•	•	•	
4.	VP Prof. Dr. Choi, Jin-Yong (South Korea)	2015	•	•		•	
5.	Dr. Nozar Ghahreman (Iran)	2015	•	•		•	
6.	Mr. Michael Davidson (USA)	2015		•			
7.	Dr. Mika Tähtikarhu (Finland)	2015		•			
8.	Eng. (Ms.) Talatha Janaki Meegastenna (Sri Lanka)	2016	•	•	•		
9.	Mr. Atin Kumar Tyagi – Direct Member, JISL (India)	2016	# ²	•		•	
10.	Mr. Jafer Kathom Alwan Alamiryi - Young Professional (Iraq)	2016			#		
11.	Eng. Nermeen Essam El-Tahan – Young Professional (Egypt)	2017		•	•		
12.	Ms. Dilek Demirel Yazici (Turkey)	2017		•	•		
13.	Dr. Jih-Shun, Liu (Chinese Taipei Committee)	2018	•	•	•		
14.	Prof. Sue Walker (South Africa)	2018	•	•	•		
15.	Engr. Reynaldo L. Baloloy (Philippines)	2019	•			•	
16.	Dr. Kumiko Tsujimoto (Japan)	2020			•		
17.	Dr. Takanori Nagano (Japan)	2020			•		
18.	Prof. Anna Dalla Marta (Italy)	2020				•	
19.	Dr. Anton Urfels - Direct member (Germany)	2020			•		
20.	President Dr. Ragab Ragab (UK)	2021					
21.	Secretary General, ICID		#		#		
Observers/ Permanent Observers							
(i)	Dr. Tsugihiko Watanabe(Japan)		•		•		
(ii)	WMO representative						
(iii)	IWMI Representative		•				
(iv)	FAO Representative						

B. New nominations received from the National Committees

No.	Name	Country	Remarks
1.	Mr. Sunil Kumar	India	Recommended as member, subject to his presence else provisional member
2.	Dr. Man Singh	India	Recommended as member, subject to his presence else provisional member
3.	Dr. Ashish Pandey	India	Recommended as member as he participated in the virtual meeting on 11 August 2021
4.	Mr. Tikaram Baral	Nepal	Recommended as member as he participated in the virtual meeting on 11 August 2021
5.	Dr. Jiabin Wu	China	Recommended as member, subject to his presence else provisional member
6.	Dr. Xu Lei	China	Recommended as member, subject to his presence else provisional member
7.	Ms. Linlin Fan – Young Professional	China	Recommended as member, subject to her presence else provisional member



² #Through representation

ROAD MAP TO ICID VISION 2030 – ACTIVITIES OF WG-CLIMATE

Goal/ Strategies	Activities	Outcomes / Outputs	Milestone for Year 2017	Milestone for Year 2018	Milestone for Year 2019	Milestone for Year 2020	Milestone for Year 2021
Goal B: Be a catalyst for change in policies and practices							
B2. Strategy: Promoting Risk Management Approaches							
B3. Strategy: Integrated irrigation and drainage management	3.2 Organize introduction of the cases to be applied to other regions	Compilation of Cases	2 Case Studies in humid region (introduction in WG Meeting)	2 Case Studies in arid/semi-arid region (introduction in WG Meeting)	2 Case Studies on unique examples (introduction in WG Meeting)	Extra Case Studies and comparison of the cases (introduction in WG Meeting)	Integration to conclude in general
B6. Strategy: Helping development of climate change adaptation strategy	6.1 Develop Guideline for Water Management Practices under Changing Climate	Guidelines	General policy and table of contents are decided	First draft of the core parts	Release the First Draft Guidelines in WIF3		Release the Final Draft Guidelines
	6.2 Prepare Position Paper on Smart Water Management for Mitigating Climate Change	Position Paper	2nd Workshop on Post Paris 2015	3rd Workshop on Post Paris 2015	Discuss in a Side Event and Release the Draft in WIF3		
	6.3 Develop position paper on adaptation to climate change	Position Paper	Communication with International Organizations	Communication with International Organizations	Release the First Draft Paper in WIF3		Release the Final Draft
Goal D: Enable cross disciplinary and inter-sectoral engagement							
D2. Strategy: Develop technical documents in non-technical language	2.1 Integrated Assessment of Climate Change Impacts	Brief Guidelines with Compilation of Case Studies	2 Case Studies with focus on technical background and uncertainty (introduction in WG Meeting)	2 Case Studies with previous year's focus plus economic and social aspects (introduction in WG Meeting)	2 Case Studies with previous year's focus plus financial and institutional arrangement (introduction in WG Meeting) and Introduction of state-of-the-art methodologies and their outcomes in WIF3	2 Case Studies with previous year's focus plus interest groups (introduction in WG Meeting)	Release the Brochure

(Source: Consultative Group (CG) Report: A Water Secure World Free of Poverty & Hunger: A Road Map to ICID Vision 2030)



DRAFT TABLE OF CONTENTS

Tentative Title of the publication (*tbd*):

Guide to Innovated Irrigation and Drainage Management under the Changing Climate

Contents (Draft)

- C.1 General Introduction
 - 1.1 Overview of the changing climate as one of the most serious global issues
 - 1.2 Agricultural water management as a mean to adapt to weather and climate
 - 1.3 Outline of the recent problems in agriculture and water use due to the climate change
- C.2 Impacts of climate change on agricultural water management
 - 2.1 Global climate change
 - 2.2 Impacts of climate change on basin hydrology and water resources
 - 2.3 Impacts of climate change on agricultural production
 - 2.4 Impacts of climate change on irrigation and drainage
 - 2.5 Case studies on climate change impacts on agricultural water management
- C.3 Adaptation to changing climate in agricultural water management
 - 3.1 Adaptation in agricultural production
 - crops -cropping pattern -cultivar and breeding -GM
 - 3.2 Adaptation with irrigation and drainage management
 - expansion of irrigation, -on-farm water management practices, -application method, -drainage improvement
 - 3.3 Countermeasures to climate change damages
 - warning system, -damage compensation, - insurances
 - 3.4 Institutional modification to adapt to climate change in agricultural water management
 - governmental policy, -facility design criteria, -management organization
 - 3.5 Case studies on adaptation to climate change in agricultural water management
- C.4 Smart water management against the climate change
 - 4.1 Smart agricultural water management as an innovated technology - overview
 - 4.2 Smart water management for adapting to the changing climate
 - 4.3 Smart water management for mitigating the climate change and for sustainable production
- C.5 Case studies on climate change impact on agricultural water management and adaptation
- C.6 Conclusion - Guide to Innovated Irrigation and Drainage Management under the Changing Climate
 - 6.1 Information, technologies, and preparedness
 - 6.2 Integrated and innovated assessment of climate change impacts
 - 6.3 Preparation and attitude of establishment of adaptation strategy to changing climate
 - 6.4 Promotion of smart water management

(Appendices if necessary)



**WORKING GROUP ON
AGRICULTURE WATER MANAGEMENT UNDER CHANGING CLIMATE (WG-CLIMATE)**

DRAFT SCOPING DOCUMENT

*(Prepared by **Ray-Shyan Wu** in consultation with Central Office and with contributions as received by e-mail from various specialists)*

1. Introduction

The ICID congress themes highlighted that the climate change needs to be recognized as an added stress on the increasingly uncertain complex and interlinked issues of rural development and food security under demographic changes, overstretched environmental and natural resources. As we still lack sufficient knowledge to better understand what is going on and what can be predicted in climate change with reasonable accuracy and cannot wait until whole understandings of the future climate change and its impacts are known. Challenges due to the climate change should be considered as another driving force to improve the irrigation and drainage system. It is therefore necessary to factor known impacts of climate change in all processes of planning, design, implementation, operation, maintenance and management of the irrigation and drainage activities. According to the Fifth Assessment Report of IPCC, it is extremely likely that human influence has been the dominant cause of global warming and the IPCC AR5 comprehensively assessed observed changes in the climate system based on available observational datasets. AR6 moves step forward with process-based understanding of climate change build on fundamental physical science.

The world has already warmed by 1 °C since pre-industrial times, due to human activity. On current trends, it is likely to pass the 1.5 °C mark between 2030 and 2052, which stresses on an urgent development of and efficient implementation of adaption measures based on present available information, including infrastructure improvement and institutional reorganization, design criteria revision and management strategy for the extreme events. Even many researches have been carried out all over the world with number of useful outcomes in terms of better availability of information related to climate, state-of-the-art techniques to evaluate and predict impacts of climate change including adaptation measures. Still, it is felt that the challenges due to climate change in the irrigation, drainage and other relevant sectors would be long lasting which calls for focused and concerted efforts from all stakeholders.

With these situation and understandings on climate change and increased role of irrigation and drainage in achieving food security in the present situation, ICID as the platform for promoting the irrigation and drainage sector is under obligation to organize a semi-permanent or standing working group on climate change for the coming decades. ICID Working Group (hereafter referred as “Working Group” or “WG”) on Climate Change and Agricultural Water Management (hereafter referred as “WG-CLIMATE”), which was established in 2005. The Working Group was established in 2005 with the name of “WG on Global Climate Change and Irrigation”, by well-designed coordination of a devoted leader Dr. Mark Svendsen. In 2007, it was renamed as “WG on Climate Change and Agricultural Water Management” with refining the target area expanding from just “irrigation” to the wider scope “water management”. The establishment was based on the recognition that the looming climate change and its likely impacts on water management for agriculture require cooperation cutting across institutional and disciplinary boundaries. This was aiming at

- (a) developing arena where relevant players or stakeholders may communicate and collaborate for intensification of data collection networks,
- (b) research into methodologies to downscale the climate impacts on water and agriculture,
- (c) review of the operation of storage systems, enhancing soil water storage with water harvesting structures, and
- (d) sharing knowledge and information

Every third year ICID triennial Congresses are organized to discuss and evaluate the upcoming and dynamic changes within the water sector in the entire world. The 22nd ICID Congress main theme was “Securing Water for Food and Rural Community under Climate Change”. As it shows explicitly, the climate change is one of the most serious and urgent issue for human society and global environment. The theme was organized in the context that improving irrigation and drainage systems and rural development would play a key role in achieving the rural water and food security under impending climate change, especially in the developing countries. Under this theme, two congress questions were raised and the one related to climate change was “How Irrigation and Drainage play an important role in Climate Change Adaptation?” with three sub-questions: 1) Understanding Impacts of Climate Change on Land and Water Use, 2) Revisiting Design and Operation Criteria for Irrigation and Drainage Facilities, and 3) Managing Frequent Floods and Droughts. Similarly, 23rd ICID Congress organized at Mexico City in October 2017 with main theme “Modernization of Irrigation and Drainage towards a New Green Revolution” and two questions “Water Productivity, Revisiting the concepts in light of water, energy and food nexus” and “State of knowledge of irrigation techniques and practicalities within given socio-economic settings”. The adaptation of precision irrigation system using new technologies such as ICT, IoT, remote sensing, control system and modeling is the way toward modernization of irrigation and drainage under green revolution to combat water scarcity.

In the past decade, the WG-CLIMATE has performed well in the context of climate change impact on irrigation and drainage system and needs to be continued with updated objectives and mandate with focus on climate change adaptation, mitigation and smart agricultural water management.

2. Formal Mandates

The WG set up the mandate to review the progression of and predictions for Global Climate Change (GCC) variability and to explore and analyze the medium-term implications of climate change variability for irrigation, drainage, and flood management. It stimulates discussion and raises awareness of water related GCC issues within the ICID network and at national scales among scientists and policy makers. The WG collaborates with global partners like UN System wide Global Framework for Climate Services (GFCS) under the leadership of WMO.

2.1 *The WG Mandate 2005*

- (a) To review the progression of and predictions for Global Climate Change (GCC) and climate variability,
- (b) To explore and analyze the medium-term implications of climate change and climate variability for irrigation, drainage, and flood control,
- (c) To stimulate discussion and raise awareness of water-related GCC issues within the ICID family,
- (d) To stimulate discussion at national scales among scientists, policy makers, and, through the media, the general public on GCC and water, and
- (e) To join the international dialogue on GCC and water

2.2 *The WG Mandate 2015*

- (a) To share the information about future prediction of the global and regional climate change and climate variability,
- (b) To explore and analyze the implications of climate change and climate variability for agricultural water management including irrigation, drainage, and flood control,
- (c) To promote archiving useful information and case studies on climate change for practical use in improved impact assessment and adaptation development,
- (d) 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,
- (e) To join the international dialogue on Climate change and water management.

2.3 *Activities and outcomes*

The WG personnel are approved and recommended by the national committee of ICID member and permanent observers. At the occasion of the WG meeting in the IEC in October 2015, the countries of members include Japan (Chairperson), Chinese Taipei (vice-chairperson), China (Secretary), and members from South Africa, Indonesia, Spain, Turkey, and Korea. The Secretary General of ICID is a member, and Representatives of WMO, IFPRI, IWMI and FAO are the permanent observers.

The WG has organized the workshop on climate change almost every year taking the opportunity of IEC of ICID. In the workshop, activities and outcomes of the WG members and observers were presented and shared for their further challenges. Especially, in the First World Irrigation Forum, held in Mardin, Turkey in 2013, the WG co-organized the Workshop "Management of Water, Crops and Soils under Climate Change". There, seventeen contributions both oral and posters were presented. The main outcomes of the workshop include; 1) It was obvious from the presentations with global evidence that the climate change is a fact not a fiction and the skepticism about the climate change is reversing to believing in, 2) The current extreme weather events of drought, floods, hurricanes, tornados, and cyclones are becoming regular visitors more than ever, and 3) In agriculture industry, the impact is visible through the change in sowing and harvest dates, length of growing season, water availability for irrigation, evapotranspiration and the shift in agro-climatic zones. The papers presented covered a wide range of climate change impact and offered solution to counter the impact through adaptation and mitigation measures. These covered the introduction of new water management techniques (e.g. SRI for Paddy Rice), new drought tolerant crops (e.g. Bambara groundnut), reducing greenhouse gases (NH₄, N₂O) through lowering the groundwater table, and reservoir management. The results also indicated that farmers are now familiar with the changing climate and are adjusting their activities accordingly. (Source: Summary Report of First World Irrigation Forum)

Dr. T. Watanabe (Honorable Chairperson) served as the general reporter for the main theme (Question 58) of ICID 22nd Congress "How Irrigation and Drainage play an important role in Climate Change Adaptation". The outcomes consist of climate change impact assessment via suitable scenarios, models and applications. Design and operation criteria for irrigation modernization, improvement and planning via facilities and institutions for food and water security under climate change. The activities of the WG-CLIMATE for 2017 to 2021 are only for the Goals B and D of ICID vision 2030, also activities involved in the whole process of the ICID activities due to the characteristics of climate change. The strategies involved integrated irrigation and drainage management, helping development of climate change adaptation strategy, develop guideline for water management practices under changing climate, prepare position paper on smart water management for mitigation and adaptation of climate change, develop integrated impact assessment of climate change with case studies and apply to other regions.

2.4 71st IEC Virtual Meeting (2020)

The outbreak of the COVID-19 pandemic has affected everyone and the irrigation sector is no different. Given the emerging situation of COVID-19, many meetings have been postponed until the situation comes under control. With this difficult situation, members were requested to make full use of web-ex platform for virtual meeting to ensure regular contribution from the WG members as well as to discuss and initiate follow-up actions emerging from the minutes of the previous WG meeting and review the progress of the action points. Accordingly, in order to organize the WebEx Meetings, Webinars and e-Discussions, ICID Central Office requested Chairs of the workbodies to initiate the processes. The following activities and actions were taken in WebEx meetings.

- (a) Updated the membership of WG-CLIMATE. Dr. Ray Shyan Wu was elected as the new Chair, Dr. Fuqiang Tian, as the new Vice Chair, and Dr. Waleed Hassan as the new Secretary.
- (b) Forward the publication planning “Guide to Innovated Irrigation and Drainage Management under the Changing Climate”.
- (c) Continuation in exchange of information, knowledge & networking via updating website of the WG and Multilingual Technical Dictionary (MTD).
- (d) The present tenure of the WG as established in 2015 comes to a closure in 2021. The WG decided to propose a new updated mandate proposal and scoping document.

3. Proposal for reconstitution of WG

Based on the current climate change issue and challenges and the new role ICID is to play in sustainable development, review of past activities and outcomes of the WG, the mandate, scope and timelines for reconstitution of WG are defined as follows:

Due to the COVID-19 pandemic, the working methodology of WG is also affected and new WG decided to continue virtually. WG propose a new name of group with same basic theme i.e. “Climate Change and Agricultural Water Management”. The new WG decided to continue the previous work as affected by COVID-19 with updated mandate up to 2028.

3.1 The WG new Name:

“Agriculture Water Management under Changing Climate “

3.2 The WG Main Objectives:

The original objectives of the WG are still relevant and to be carried over:

- (a) To prepare the arena and develop network for cooperation cutting across institutional and disciplinary boundaries. It include sharing the useful information, applicable methods, and case studies (both successful and unsuccessful).
- (b) Focus on information exchange and interconnectedness development in the community, compilation and archiving of experiences and case studies on climate change impact assessment and adaptation strategy from all over the world.
- (c) Develop more understanding in an integrated manner with focus on inter-sectoral and trans-boundary approach.

3.3 Updated Mandate 2021:

Since climate change future projections are much more precise and reliable with higher temporal and spatial resolution and development of models for assessing the impacts and designing adaptation measures are being accelerated. Therefore, it is a need of time to develop an integrated approach to address challenges of complex climate change and climate variability as assessment and adaptation planning at local scale. So keeping in view the climate change adaptation and mitigation for agricultural water management at local scale, the following updated mandate is proposed.

- (a) To explore and analyze future prediction of the global and regional climate change variability and its implications for agricultural water management
- (b) Exchange useful information and experience from successful and unsuccessful case studies at local scale on climate change for practical use in improved impact assessment and adaptation development
- (c) To prepare “Guide to Innovated Irrigation and Drainage Management under Changing Climate” for knowledge sharing about climate change adaptation, mitigation for smart agricultural water use
- (d) To enhance interaction on climate change mitigation and adaptation for agricultural water management at national and regional scales among the stakeholders including academicians, practitioners, decision makers, media as well as farmers and water users in a region,
- (e) To join the international dialogue on climate change and water management.

3.4 *Relevance of the Working Group:*

The relevance of the WG can be specified as follows:

- (a) The topic of climate change and water management is relevant to the vision and mission of ICID and of higher interest for its members, especially in the developing countries that are sensitive and vulnerable to climate change;
- (b) The WG is expected to contribute to effective implementation of the strategy theme Basin and to other strategy themes for that matter;
- (c) It may be expected that, in the coming period, climate change impact and adaptation strategies be factored in all processes and activities of irrigation and drainage.

3.5 *Existing gap that the Working Group is expected to fill*

Almost all other ICID Working Groups and Task Forces have a related scope of climate change, especially WG-CROP, WG-ON-FARM, WG-WFE-N, WG-SDTA, WG-ENV, WG-CAFM, WG-DROUGHT, and WG-BIO-ENERGY. The Working Group will coordinate these groups for sharing information, collaborating works and enhancing discussion about climate change as cross cutting issue.

3.6 *Expected collaboration with other International Organizations*

International Organizations (ADB, FAO, IFPRI, IWMI, WB, WMO etc.) can contribute to the activities of the WG as Permanent Observers (PO). On the other hand, presentations on the works and achievements of the WG could be presented at the occasion of events organized by International Organizations.

4. **Work Plan**

4.1 *Scope:*

The WG is expected to investigate, analyze, and disseminate information on new developments and to formulate recommendations. The plan is with respect to:

- (a) The progression of and predictions for climate change and climate variability
- (b) The medium-term adaptation strategies of climate change and climate variability for irrigation, drainage, and flood control
- (c) The water environment issues relating to climate change within the scope of agricultural water management activities within ICID
- (d) The international dialogue on climate change and agricultural water environment between regions and countries.

A proposal for the six-year rolling plan is shown in **Appendix A**.

4.2 *Target audience:*

The target audience for this working group will be meteorologists, farmers, managers of irrigation schemes, researchers, consultants, government officials, and staff of international organizations working on the topic.

4.3 *Outputs*

The expected outputs can be expected from this WG:

- (a) Sharing knowledge and experiences with and by the representatives of NCs, and disseminating this knowledge within their country;
- (b) Presenting condensed overview of existing key reports (IPCC, UNESCO, WMO, etc.), national adaptation guidelines and other relevant publications on the topic;
- (c) Organizing or co-organizing at least one workshop, seminar or symposium in every two years at occasion of an international ICID meeting; and
- (d) Distributing ICID experiences in practice for adaptation to climate change in irrigation, drainage and flood sector

4.4 *Timelines*

While climate change is a very important and complex issue to deal with in the management of agricultural water sectors, it is recommended that the term of this WG will be set further for next six years up to 2027. The timeline would have to be based on the scope of work and the expected outputs. Details of the timeline would have to be formulated and refined at the meetings of the WG.

4.5 *Collaborators and dissemination strategy*

4.5.1 The WG would have to base its activities on an open attitude with a clear scope for invitation of outsiders.

4.5.2 The dissemination strategy would have to be based of reaching those who can apply the findings and

recommendations of the WG in their research and especially in policy development, decision making and implementation in practice.

4.6 Core Group and Members

This draft has been circulated among the members of WG-climate. Comments received from the members of the WG have been included in this scoping document. The Core Group consists of:

Convener (Chair):	Prof. Ray-Shyan Wu	(Chinese Taipei Committee)
Vice Chair:	Dr. Fuqiang Tian	(China)
Secretary:	Dr. Waleed Hassan M. Abou El Hassan	(Egypt)
Members:	Prof. Sue Walker	(South Africa)
	Prof. Choi, Jin-Yong	(South Korea)
	Mr. Jafer Kathom Alwan Alamiryi	(Iraq)
	Eng. Janaki Meegstenna	(Sri Lanka)
	Ms. Dilek Demirel Yazici	(Turkey)
	Dr. Jih Shun Liu	(Chinese Taipei Committee)
	Eng (Ms.) Nermeen Essam El-Tahan	(Egypt)
	Engr. Reynaldo L. Baloloy	(Philippines)
	Dr. Kumiko TSUJIMOTO	(Japan)
	Dr. Mika Tähtikarhu	(Finland)
	Dr. Nozar Ghahreman	(Iran)
	Mr. Michael Davidson	(United States of America)
	Dr. Takanori NAGANO	(Japan)
	Direct Member:	Dr. Anton Urfels
Observer:	Prof. Dr. Tsugihiko WATANABE	(Japan)
Provisional Member:	Prof. Anna Dalla Marta	(Italy)



SIX YEAR ROLLING PLAN

Item of Mandate	2021	2022	2023	2024	2025	2026	2027	2028	
Mailing the Scoping Document to participants (current WG Climate)	Yellow								Chairperson, Vice-Chair and Secretary of WG Climate
Comments on Scoping Document,	Yellow								Web meeting
Finalizing Scoping Document and detailing of Work plan on 72 st IEC	Red								Chairperson, Vice-Chair and Secretary
Invitation to NC for nominations and information		Blue							Central Office
Submission of nominations and information		Light Blue							National Committees
Meeting in 24 th Congress, Adelaide, Australia			Red						Members and Permanent Observers. Electing Chairperson, Vice-Chair and Secretary
Finalize Climate Change guide book	Blue	Blue	Blue						Selected / nominated members
Meeting in 74 th ICE Beijing China				Red					Members and Permanent Observers
Meeting in 25 th Congress Andhra Pradesh State, India					Red				Members and Permanent Observers
Side event with workshop on AR6 topics						Orange			Selected members
Meeting in 76 th ICE Sydney Australia					Red				Members and Permanent Observers
Meeting in 77 th ICE TBA						Red			Members and Permanent Observers
Side event with workshop on topics						Green			Selected members
Meeting in 78 th ICE TBA							Red		Members and Permanent Observers
Side event with workshop on topics							Green		Selected members
Meeting in 79 th ICE TBA								Red	Members and Permanent Observers
Position paper on key issues related to the Climate Change Smart Agricultural Water Management								Blue	Chairperson, Vice-Chair and Secretary

