MINUTES OF THE VIRTUAL 1ST INFORMAL MEETING OF THE WORKING GROUP ON WATER AND CROPS (WG-WATER & CROP)
12 October 2020, 12:30 hours (IST)
Strategy Theme: On-Farm
Presented by the Chairman

Year of Establishment: 2019
Completion of the Mandate: 2025

Mandate: The new mandate can be seen under Item 1.

Members Present: (1) Vice President Hon. Dr. Ragab Ragab (UK), Chairman; (2) Vice President Dr. K. Yella Reddy (India), Secretary; (3) Mrs. Gao Hong (China); (4) Prof. Dr. Zeinab Hussien Behairy (Egypt); (5) Ir. Felipe Dantas (Australia); and (6) Secretary General ICID represented by Er. B.A. Chivate, Director (Technical), ICID Central Office New Delhi, India.

Observer: Mr. Syaiful Mahdi (Indonesia).

Website: http://icid-ciid.org/inner_page/122

WG-W&C Minutes Item 1: Action Taken Report by Chair

1. The Chair welcomed the members and briefly presented the report on the actions taken on the decisions and proposals held at its last meeting at Bali, Indonesia in September 2019. Membership status is given in Annex 3 (page 43).

WG-W&C Minutes Item 1.1: Select new Vice-Chair of the WG

2. During the virtual meeting, the Chairman of the WG thanked VPH Laurie C. Tollefson (Canada), who has stepped down from Vice-Chairman of the group. In this regard, WG will always remember his contribution towards the activities of the group. Further, it was noted that the new Vice-Chair of the WG-WATER & CROP which has now been postponed to the next meeting of the group after approval the PCTA to the new mandate for a new Working Group on Water Food Energy Nexus (WG-WFE-N).

WG-W&C Minutes Item 2: Introduction of the new Working Group on Water Food Energy Nexus by the Chair

3. The Chairman presented the ‘Scoping Document’ (refer Annex 2) of the new Working on Water Food Energy Nexus (WG-WFE_N) with the new mandate and submitted it to PCTA/IEC for approval. Further, PCTA recommended for the establishment of a new Working Group on Water Food Energy Nexus with the following new mandate under Strategy Theme ‘Basin’ during the first informal meeting of group on 12 October 2020, as the WG-WATER & CROP has completed its mandated activities.

New Mandate of the WG:

(a) to exchange information, knowledge, and experience, as well as networking on the Water-Food-Energy Nexus topic in order to be up to date with new developments, methods and approaches. This can be the basis for a possible position paper on key issues on the nexus.
(b) to prepare an overview document on the state of the art on improving water use efficiency and productivity within the nexus.
(c) to produce a document of impact of climate change and possible use of non-conventional less water consuming crops
(d) to prepare an overview document on the state of the art on model applications as useful management tools for water, crops, field and energy management within the nexus
(e) to prepare and present reports on case studies on recent developments in the countries that are represented in the WG; and from presented cases of the workshops
(f) to organize international workshops, seminars or symposia on the Nexus topic.
(g) to implement ICID 2030 vision
4. In view of the above, the Scoping Document for a new Working Group on Water Food Energy Nexus (WG-WFE_N) was circulated to the members of the group for their comments/suggestions, if any. Further, the WG recommended IEC through the PCTA to establish a new WG on Water Food Energy Nexus under Strategy Theme ‘Basin’ in place of WG on Water and Crop (WG-WATER & CROP) with new mandate as presented in the Scoping document, subject to support of at least 10 NCs to its activities by way of sponsoring its experts to participate in the WG activities.

WG-W&C Minutes Item 3: Road Map to ICID Vision 2030: Activities on efficient use of water in crop production

5. During the virtual meeting, Chair discussed and briefed the activities of the WG such as Goals/Strategies, Actions, Outcomes/Outputs, Milestones as part of Road Map to ICID Vision 2030 based on the new mandate of the WG and provided it to PCTA for the updated status of the progress (refer Annex 3).

WG-W&C Minutes Item 4: Multi-functionality of water uses in paddy (Rice) cultivation

6. It was noted that the WG decided to bring out a ‘Technical Report’ based on papers contributed by its members. The report is a consolidation of contributions and collection of information from members on various topics under the mandate of the group. NCs of China, Indonesia, Philippines and Italy have been presented their papers for the technical report of the WG. While Dr. Leon van Rensburg (South Africa) through Prof. Sylvester Mpandeli, Dr. Chung-Feng, Ding through Dr. Hsiao-Wen Wang (CTC) and Prof. Won-Ho Nam (KCID) have not been contributed their papers for the technical report of the WG.

7. During the virtual meeting, Chair of the group requested Prof. Zeina Hussein Behairy (Egypt) to contribute based on the experience as Multi-functionality of water use in paddy rice cultivation from Egypt in the technical report of the WG. In this regard, Prof. Behairy informed the members that she would submit a report in this regard. Further, Ir. Felipe Dantas (Australia), member of the WG, requested to share experience in Australia about the document on Multi-functionality of water use in paddy rice cultivation. In response, Ir. Felipe Dantas shared a document on Australian Rice Market based on the Multi-functionality of water use in paddy rice cultivation. Vice President Dr. Reddy has informed that he would submit a document related to the water use in paddy rice cultivation for inclusion in the technical report of the group.

WG-W&C Minutes Item 5: Updating Multilingual Technical Dictionary (MTD)

8. The Chair informed the group that Dr. P. Soman (India) who is coordinator to undertake the task of reviewing and updating the terms of MTD of the WG, would be replaced in the next meeting of the WG based on the new mandate for a new WG on Water Food Energy Nexus (WG-WFE-N). The Group will nominate a new coordinator along with the members for the new WG.


9. During the virtual meeting, the Chair briefed the members that twelve abstracts have been received which were reviewed by the Review Committee. While the International Workshop of the WG-WATER & CROP titled ‘The Water-Energy-Food-Nexus: Implementation and Examples of Application’ planned during 5th AfRC and 71st IEC at Marrakesh, Morocco had to be postponed due to postponement of 5th AfRC to September 2021 due to global COVID-19 pandemic situation. For effectiveness of the workshop, the group agreed to reschedule and invite the papers from the authors for the international workshop of the WG, accordingly. In this regard, ICID Central Office will again send the revised ‘Call for papers’ to the members/NCs for inviting their abstracts/papers for the workshop of the group.

WG-W&C Minutes Item 7: ICID-IWRA Collaboration

10. During the virtual meeting, Chair informed the members about the collaboration between national and international organizations like International Water Resources Association (IWRA), International Water Association (IWA), Acqua foundation, International Water Management Institute (IWMI), International Center for Agricultural Research in the Dry Areas (ICARDA) etc. which can cover under the umbrella of new working group based on the new mandate for strengthening the activities of the group such as - (i) organizing joint Seminars/Workshops, and (ii) bring out a Special Issue of the Journal based on selected papers from the WG workshop/seminars, possibly with financial support from them. Further, ICID and interesting international organizations may acknowledge their mutual interests in closely working together on the ‘Water-Energy-Food Nexus’. In this regard, Chair requested the ICID CO may invite them for participating in the next meeting of the new WG in 2021.
WG-W&C Minutes Item 8: Publications of the Working Group

11. Chair Dr. Ragab informed the members about the latest version of SALTMED software and published a paper titled ‘SALTMED publications in Irrigation and Drainage’ (Virtual Issue, 20 May 2020) which is available at https://onlinelibrary.wiley.com/doi/loc/10.1002/(ISSN)1531-0361.saltmed-publications and uploaded on the WG website for use by its members. The Chair will provide further updates at the meeting.

WG-W&C Minutes Item 9: New sub-topic ‘Water Use and Productivity’

12. President Honourer Saeed Nairizi chaired a zoom meeting on the crop water requirement, water use efficiency and water productivity under greenhouse condition. The meeting was held on 15 September 2020.

WG-W&C Minutes Item 10: Tenure of the Working Group (Summary Report)

13. The Working Group presented a Summary Report of the WG and informed the members that the tenure of the group ended in 2019. The members of the WG may look forward to work together again in the new Working Group on Water Energy Food Nexus (WG-WEF_N) which will build on the achievements of the WG Water & Crops. The WG looked back at their achievements since 1995 (when he joined the WG) where it produced the widely used ‘FAO Irrigation and Drainage paper 56 on Crop Water Requirements’ with involvement of Rick Allen and Louis Pereira members of the WG at that time. The WG conducted several workshops and produced 10 proceedings as well as 25 papers to ICID journal and 2 free download models which are available at ICID website http://icid-cid.org/inner_page/122

WG-W&C Minutes Item 11: Any other business

14. The chair wished all participants well and hoped to have the next meeting in persons.

15. The meeting ended with thanks to the Chair, and ICID Central Office for organizing the meeting.

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1. **Introduction**

The limited water resources, the increasing demand on food for ever increasing population and the climate change impact are great challenges we are all facing. These challenges require, a number of approaches related to water, crop and field management. Integrated management is the way forward. This can be achieved by considering integrated management within the Water-Food-Energy Nexus. The Working Group on Water and Crops has been focusing on improving the irrigation efficiency and water productivity and over the years this WG produced the FAO Irrigation and Drainage Paper 56 which is now widely used all over the world to estimate the crop water requirement. In the last two years, the WG has moved a step further to include the energy element within the water and crops relation and conducted its first workshop in Bali in 2019 and this year a second workshop is planned in Morocco in December 2020. The work related to the nexus has just started and will require more efforts and activities in years to come. Given, the mandate of the WG on Water & Crops came to its end. It is timely to build on what it has achieved over the past years and adopt a new vision of integrated management. For that reason, the WG W&C would like to adopt the Water-Food-Energy Nexus as a new line of activity and to be named, as Working Group on Water, Food and Energy Nexus (WG WFE_N). ICID at present has no WG that carries this name and no WG is focusing on WFE Nexus. This will be a unique WG with very topical line of activity.

Although the Nexus concept is not new, it is hard to find practical examples. The WG aims to develop approaches by which we can advise on “how to produce more crop per drop per kilowatt energy and per unit area of land”. This will require more efficient irrigation systems (e.g. Drip – Micro Irrigation) and water saving approaches such as deficit irrigation (regulated deficit irrigation or Partial Root Drying Method, PRD) and subsurface drip irrigation. The WG will focus on such water saving approaches.

With respect to activities, broadly speaking, the following aspects are of major importance:

- (a) interaction between the three elements of the Nexus
- (b) improving the irrigation water use efficient and water productivity;
- (c) developing water saving approaches
- (d) Improving the current methodologies of estimating the irrigation water requirement
- (e) Promoting non-conventional less water consuming crops (quinoa, amaranth, barley, …etc.)
- (f) Promoting the use of models as management tools.

2. **Objectives**

2.1 The WG aims

- (a) to develop approaches by which we can advise on “how to produce more crop per drop per kilowatt energy and per unit area of land”;
- (b) to promote the efficient use of water in crop production,
- (c) to provide models and input to test crop-water-energy models,
- (d) to develop techniques to balance water supply against water demand,
- (e) to promote the multifunctional use of water especially in paddy (rice) cultivation,
- (f) to investigate the adaptation of agriculture to climate change and to promote low input agriculture,
- (g) to contribute to effective implementation of the ICID vision 2030.

2.2 Relevance of the Working Group to the scope of the “On Farm” Thematic Area

The WG activities are related to the field scale management of water crops and energy and complements the work of the other two WGs, the WG on sustainable on-farm irrigation system development (WG-SON-FARM) and the WG on use of non-conventional water resources for irrigation (WG-NCWRI). There is no overlapping or duplication between the three WGs. Each WG has different mandate and activities. To our knowledge, there is no WG based on WFE Nexus.
The new WG has taken good note of the activities of these work bodies when preparing this Scoping Document.

3. **State of knowledge on the topic**

3.1 The outgoing WG (W&C) has conducted one workshop on Water-Food-energy Nexus last year in Bali, Indonesia during the ICID annual meeting and planned another one this year in Morocco during the ICID annual meeting. Several sources of information were gathered and more is expected to build a capacity in this new area. Several organizations are interested in the topic, such as FAO, ICARDA, ICBA, IWMI and national organizations.

3.2 Mandate of the Working Group

Mandate of the Working Group is based on the specific niche that this WG can fill in this area and can be formulated as follows:

(a) to exchange information, knowledge, and experience, as well as networking on the Water-Food-Energy Nexus topic in order to be up to date with new developments, methods and approaches. This can be the basis for a possible position paper on key issues on the nexus.

(b) to prepare an overview document on the state of the art on improving water use efficiency and productivity within the nexus.

(c) to produce a document of impact of climate change and possible use of non-conventional less water consuming crops.

(d) to prepare an overview document on the state of the art on model applications as useful management tools for water, crops, field and energy management within the nexus.

(e) to prepare and present reports on case studies on recent developments in the countries that are represented in the WG; and from presented cases of the workshops.

(f) to organize international workshops, seminars or symposia on the Nexus topic.

(g) to implement ICID 2030 vision.

3.3 How is the Working Group expected to collaborate with the other International Organizations?

International organizations can contribute to the activities of the WG by nominating Permanent Observers (PO). On the other hand, presentations of the work and achievements of the WG can be presented at the occasion of events organized by international organizations.

4. **Work Plan**

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

(a) to exchange information, knowledge and experience, as well as networking on the Water-Food-Energy Nexus topic in order to be up to date with new developments, methods and approaches. This can be the basis for a possible position paper on key issues on the nexus,

(b) to prepare an overview document on the state of the art on improving water use efficiency and productivity within the nexus,

(c) to produce a document of impact of climate change and possible use of non-conventional less water consuming crops,

(d) to prepare an overview document on the state of the art on model applications as useful management tools for water, crops, field and energy management within the nexus,

(e) prepare and present reports on case studies on recent development in the countries that are represented in the WG; and from presented cases of the workshops,

(f) to organize international workshops, seminars or symposia on the Nexus topic.

4.1 A proposal for the three-year rolling plan is shown in Appendix A.

4.2 **Target audience**

The target audience for this working group will be managers of irrigation schemes, researchers, consultants, manufacturers, government officials, farmer’s representatives and a Team of international organizations working on the topic.
4.3 Outputs

The expected outputs are those listed above under Work Plan

4.4 Timelines

As the Water-Food-Energy Nexus is a very important topic. In the light of its role in supporting the global food production, it is recommended that the initial term of this WG will be set at 5 years. The timeline would be based on the scope of work and the expected output. Details of the timeline would be formulated and refined during the inaugural meeting 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 that are interested in the topic on a Permanent Observer (PO), or ad hoc basis.

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.

4.5.3 All members and observers of the former WG-WATER & CROP will be automatically members and observers of the new WG except they are not eager anymore to pursue. The remaining members will be nominated by the NCs, assessed and accepted by the WG.

4.5.4 Each National Committee is allowed to nominate four professionals related to drainage provided one of them is preferred to be a young professional.
<table>
<thead>
<tr>
<th>Item of Mandate</th>
<th>2020</th>
<th>2021</th>
<th>2022</th>
<th>2023</th>
<th>Actor(s)</th>
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<tbody>
<tr>
<td>Mailing the Scoping Document to participants (current WG W&amp;C)</td>
<td></td>
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<td>Convener</td>
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<tr>
<td>Comments on Scoping Document,</td>
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<td>Participants informal meeting</td>
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<td>Finalizing Scoping Document and detailing of Work plan</td>
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<td>Convener</td>
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<td>Invitation to NC for nominations and information</td>
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<td>Central Office</td>
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<td>Submission of nominations and information</td>
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<td>National Committees</td>
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<td>1st Meeting Sydney, Australia</td>
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<td>Members and Permanent Observers</td>
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<tr>
<td>Exchange of information, knowledge, experience, networking</td>
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<td>Members and Permanent Observers</td>
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<tr>
<td>Reporting on the two workshops on case studies related to Water-Food-Energy Nexus</td>
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<td>Members and Permanent Observers</td>
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<tr>
<td>Preparation and presentation of reports on water saving approaches, improving water use efficiency and productivity</td>
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<td></td>
<td>Members and Permanent Observers</td>
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<tr>
<td>Collect and review models, approaches, techniques, methodologies, literature, guidelines, codes of practice, etc.</td>
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<td>Members and Permanent Observers</td>
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<tr>
<td>Prepare an overview document on the state of the art on model applications</td>
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<td>Selected / nominated members</td>
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<tr>
<td>2nd Meeting in China, including Workshop</td>
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<td>Members and Permanent Observers</td>
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<tr>
<td>Produce a document of climate change impact and the possible use of non-conventional less water consuming crops</td>
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<td>Selected members</td>
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<tr>
<td>Formulation of recommendations</td>
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<td>Selected / nominated Members</td>
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<tr>
<td>Position paper on key issues related to the Water-Food-Energy Nexus</td>
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<td>Chairperson, Vice-Chair and Secretary</td>
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<tr>
<td>3rd Meeting including a Workshop</td>
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<td>Members and Permanent Observers</td>
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### ROAD MAP TO ICID VISION 2030 – ACTIVITIES OF NEW WG-WEF-N

<table>
<thead>
<tr>
<th>Goals/Strategies</th>
<th>Activities</th>
<th>Outcomes/Outputs</th>
<th>Milestone for Year 2018</th>
<th>Milestone for Year 2019</th>
<th>Milestone for Year 2020</th>
<th>Milestone for Year 2021</th>
<th>Milestone for Year 2022</th>
<th>Milestone for Year 2023</th>
<th>Resolution Lead Person</th>
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<tbody>
<tr>
<td><strong>Strategy 5:</strong> Supporting water productivity enhancement</td>
<td>5.3 Develop guidelines on efficient use of water in crop production</td>
<td>Guidelines</td>
<td>Outline of guidelines – introduction</td>
<td>Release the first draft guidelines</td>
<td>Finalise the draft guidelines and publish</td>
<td>Tbc next meeting</td>
<td>Tbc next meeting</td>
<td>Tbc next meeting</td>
<td>Merge Item 5 and B1, Dr Marco Arcieri (Italy)</td>
</tr>
<tr>
<td><strong>Strategy B1:</strong> Supporting Development of Appropriate Policies</td>
<td>1.13 Technical Report on Efficient Use of Water in Crop Production</td>
<td>Report</td>
<td>Prepare the first draft report for discussion</td>
<td>Release the second draft report</td>
<td>Finalise the draft report and publish</td>
<td>Tbc next meeting</td>
<td>Tbc next meeting</td>
<td>Tbc next meeting</td>
<td>Dr Marco Arcieri (Italy)</td>
</tr>
<tr>
<td><strong>Strategy C3:</strong> Promoting Regional Cooperation</td>
<td>3.2 Internationa l Workshop/s eminar on ‘Improving Water Productivity in the frame work of Water Energy Food Nexus’</td>
<td>Workshop proceedings</td>
<td>Announcement of workshop</td>
<td>Organising Workshop in Canada</td>
<td>Publication of papers in the Special Issue of the Journal</td>
<td>Tbc next meeting</td>
<td>Tbc next meeting</td>
<td>Tbc next meeting</td>
<td>VPH Laurie C Tollefson (Canada)</td>
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<td><strong>Strategy D2:</strong> Developing Technical Documents in Non-technical Language</td>
<td>2.2 Crop – Water-Energy Nexus Technical Report</td>
<td>Workshop</td>
<td>Workshop</td>
<td>Tbc next meeting</td>
<td>Tbc next meeting</td>
<td>Tbc next meeting</td>
<td>Dr K Y Reddy (India)</td>
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<tr>
<td><strong>Strategy E2:</strong> Strengthening Extension Services with AWM information</td>
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<td>Tbc next meeting</td>
<td>Tbc next meeting</td>
<td>Dr Nader Heydari (Iran)</td>
</tr>
<tr>
<td><strong>Strategy E3:</strong> Developing and Promoting Tools of AWM</td>
<td>3.1 Support research and development of modelling tools</td>
<td>Development of suitable Models, Sensors, Tools for field use</td>
<td>Prepare action plan</td>
<td>Draft report on various developments</td>
<td>Consolidation and final report</td>
<td>Tbc next meeting</td>
<td>Tbc next meeting</td>
<td>Tbc next meeting</td>
<td>Dr Ragab Ragab</td>
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<tr>
<td><strong>Strategy F3:</strong> Technical Training of Young Professionals from Member countries</td>
<td>3.9 Training on Crop Water Models Aqua Crop</td>
<td>Conduct Training workshops</td>
<td>Training workshops</td>
<td></td>
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<td>Tbc next meeting</td>
<td>Tbc next meeting</td>
<td>Tbc next meeting</td>
<td>All Members are responsible.</td>
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</tbody>
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