

**MINUTES OF THE 1<sup>ST</sup> VIRTUAL MEETING OF THE  
WORKING GROUP ON USE OF NON-CONVENTIONAL WATER  
RESOURCES FOR IRRIGATION (WG-NCWRI)**

9 February 2022, 16:30 Hours

**Strategy Theme: On-Farm**

**Presented by the Chair**

**Year of Establishment: 2018**

**Completion of the Mandate: 2024**

**Mandate:** To exchange knowledge, experience, and data as well as networking on the topic in order to be up to date with new developments, methods, and approaches; to prepare comprehensive reviews and prospects with respect to different aspects of NCWR. Producing technical manuals, guidelines, or standards with respect to all NCWR including wastewater, drainage water, and saline/brackish water; to organizing international workshops, seminars, and meetings on the NCWR topic, to producing documents on successful case studies with the new developments with respect to NCWR presented by the members from different countries; to enlarge the membership of the WG by encouraging more member countries where the use of non-conventional waters is a common practice for irrigation management.

**Members present:** (1) Dr. Wenyong Wu, Chair (China); (2) Dr. Tapas Kumar Biswas, Vice chair (Australia); (3) Prof. Qi Xuebin (China); (4) Dr. Ashish Pandey (India); (5) Dr. Sunil D. Gorantiwar (India); (6) VPH Dr. Karim Shiati (Iran); (7) Dr. (Ms.) Anna Tedeschi (Italy); (8) Dr. Tasuku Kato (Japan); (9) Mr. Mohamed Ouhssain (Morocco); (10) Ms. Jigyasha Rai Yangkhurung (Nepal); (11) President Dr. R. Ragab (United Kingdom); (12) Er. B.A. Chivate, Director (Technical), ICID Central Office (India).

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**Website:** [http://icid-ciid.org/inner\\_page/123](http://icid-ciid.org/inner_page/123)

**WG-NCWRI Minutes Item 1: Action taken report by Chair**

1. Five nominates from China, India, Nepal, and Chinese Taipei were accepted as members of the working group in 2021. The chair introduced that four new members had made reports and invited Dr. Sunil D. Gorantiwar to make a presentation about his research work as a new member of the working group in the next meeting.

**WG-NCWRI Minutes Item 2: Brief of the virtual meeting organized in 2021**

2. Chair briefed all members of the WG that three virtual zoom meetings of WG-NCWRI were organized on 05 August 2021, 20 October 2021, and 27 November 2021. Activities of organizing a workshop on NCWR, Capacity Building Training, etc. being launched as part of Road Map to ICID Vision 2030.

**WG-NCWRI Minutes Item 3: Road Map to ICID Vision 2030 – Activities on non-conventional water resources for irrigation**

3. Case study document - the use of non-conventional waters in different countries. Dr. Tasuku Kato is responsible for the preparation of the case studies.

4. The draft document of reclaimed water irrigation guidelines. Dr. Wu Wenyong is responsible.

5. Use of nonconventional water for food production” for the workshop. Dr. Tapas is responsible for the workshop flyer.

6. Guideline document of brackish water irrigation. Dr. Anna is responsible for drafting the guideline outline.

7. Capacity building training on nonconventional water resources use for irrigation. Dr. Tapas Biswas (Australia), Dr. Ashish Pandey (India), and Dr. Tasuku Kato (Japan) volunteered as members of the Organizing Committee.

**WG-NCWRI Minutes Item 4: Discuss and develop a work plan based on the new mandate**

**WG-NCWRI Minutes Item 4.1: Prepare a state-of-the-art document on the use of NCWR**

8. Dr. Tasuku Kato did not provide any new progress since the last report as he still collecting information. People were encouraged to share relevant papers with Dr. Tasuku Kato. Dr. Tasuku Kato will share current files with all members. Dr. Ashish Pandey will help to use the free online FTP or website. Dr. Wu suggested organizing all current

papers according to the countries. President Dr. R. Ragab suggested that each site should be introduced in one simple paragraph in its own words and the type of water resource of each case should be classified. Dr. Tapas Kumar Biswas suggested the title should be highlighted at first and relevant details should be reported in a box, also cite information. Dr. Tasuku Kato said he would finish the draft case study document before the end of March 2022.

**WG-NCWRI Minutes Item 4.2: Developing manuals/ standards with respect to NCWR**

9. Dr. Wu Wenyong reported the new achievements of the reclaimed water irrigation guideline and proposed to finish the first draft of the guideline before the end of June and send it to all members for suggestions. President Dr. R. Ragab suggested that this report should have more new information when compared with the previous guidelines from WHO and FAO, which did not update anymore. Dr. Wenyong Wu said that this guideline would have more progress in risk evaluation, risk prevention, and water quality. The outline of the Reclaimed Water Irrigation Guideline is given in **Appendix 1**.

10. Dr. Anna has finished the outline and circulated it among members. Unfortunately, the feedback was very poor. To improve this guideline better, WG needs some experts in this area. The work that Dr. Anna has done in China is really helpful for some parts of this guideline, but still needs more contributions for other parts.

11. President Dr. Ragab and members are expected to give suggestions about editing and finalizing the guideline. President Dr. Ragab suggested that WG should get help from someone who was in the old group for the previous FAO guideline. As for the suggestions for content: (1) Look for something relevant to nowadays. (2) The salinity measured in the lab was different from the data got from the field. (3) One should know when to leach and how much water needs to add to avoid wasting water.

12. The WG members are expected to volunteer to participate in the core international team for editing the guideline. The leader of the team should be nominated, who has a research background in soil salinity management or brackish water irrigation. Dr. Wu suggested selecting a leader for this guideline, but no one volunteered. President Dr. Ragab proposed Dr. Wenyong Wu take over this job temporarily until WG finds the most suitable person who could be a leader of this guideline. Dr. Wenyong Wu would talk with Dr. Anna and Dr. Tapas Kumar Biswas then present a plan on how to coordinate this guideline.

**WG-NCWRI Minutes Item 4.3: Organizing an international workshop on NCWR topics**

13. Dr. Tapas has finished the draft flyer and shared it with all members, and only Dr. Wu gave suggestions. It was informed that a room has been given for this workshop and David Andersen has agreed to chair all sessions.

14. Dr. Tapas suggested that to use “Wastewater Irrigation for high-value agriculture: challenges and opportunities” to attract participants who are interested in high-value agriculture. After discussions, the theme “Irrigation of nonconventional water in high-value agriculture: challenges and opportunities” was finally approved. Dr. Tapas has invited some speakers and WG could also pick up some speakers from the abstracts. Dr. Tapas will share the flyer which may not contain all participants’ names in one week.

**WG-NCWRI Minutes Item 4.4: Capacity building training and workshop**

15. During the virtual meeting in August 2021, President Dr. Ragab introduced future activities of the WG i.e. Capacity Building Training to train users on NCWRI to be organized in 2022. After discussion, Dr. Tapas Biswas (Australia), Dr. Ashish Pandey (India), and Dr. Tasuku Kato (Japan) volunteered as members of the Organizing Committee for the training.

16. During the virtual meeting in October 2021, the group took note about the training courses to users, which should include reclaimed water irrigation, brackish water irrigation, rain harvest and use in dryland, drainage water recycles, reuse, etc. Chair discussed with members to recommend appropriate professors who can spare time to give lessons.

17. After discussion, Dr. Tapas Biswas (Australia), Dr. Ashish Pandey (India), Dr. Tasuku Kato (Japan), Dr. Qi Xuebin (China), and Dr. R. Ragab (UK) would teach the training course. A short file about training content would be discussed.

**WG-NCWRI Minutes Item 5: Any other business**

18. President Dr. Ragab made a closing remark of the first virtual meeting.



### **Outline of Reclaimed Water Irrigation Guideline**

- 1 Introduction
- 2 Planning Considerations of Irrigation System
  - 2.1 Introduction
  - 2.2 Water Quality Considerations
    - 2.2.1 Organic and Nutrient Parameters
    - 2.2.2 Inorganic Salt Parameters
    - 2.2.3 Heavy Metal Parameters
    - 2.2.4 Hygiene and Sensory Parameters
  - 2.3 Feasible Evaluation of Planning Area
    - 2.3.1 Feasible Mapping Using Risk Assessment Model
    - 2.3.2 Feasible Evaluation Using Multi-Parameter Evaluation Method
    - 2.3.3 Engineering Considerations to Different Allocation
  - 2.4 Selection of Irrigation Methods
    - 2.4.1 Basic Features of Different Irrigation Method
    - 2.4.2 Criteria for Selection of an Appropriate Irrigation Method
  - 2.5 Storage and Irrigation Area Requirement
    - 2.5.1 Storage Requirement
    - 2.5.2 Irrigation Area Requirement
  - References
- 3 Design and Management Considerations of Irrigation system
  - 3.1 Introduction
  - 3.2 Crop Selection and Management
    - 3.2.1 Fate of Contaminants in Soil-Plant System
    - 3.2.2 Risk Assessment of Contaminants in Soil-Plant System
  - 3.3 Considerations in Irrigation System Design
    - 3.3.1 Drip Irrigation System
    - 3.3.2 Surface Irrigation System
    - 3.3.3 Sprinkler Irrigation System
  - 3.4 Buffering Zone
  - 3.5 Warning Signals
  - 3.6 Management and Operation of Irrigation System
    - 3.6.1 Multiple Water Resources Management
    - 3.6.2 Salt Control
    - 3.6.3 Adjusting Fertilizer Applications
    - 3.6.4 Management of Storage Systems
    - 3.6.5 Monitoring
  - Reference
- 4 Practical Projects of Reclaimed Water Irrigation
  - 4.1 Overview of Reclaimed Water Irrigation
  - 4.2 International Experience of Reclaimed Water Irrigation

4.2.1 The United States

4.2.2 Israel

4.2.3 Spain

4.2.4 China

Reference

5 Retrospect and Prospect of Reclaimed Water Irrigation Research

5.1 Introductions

5.2 Risk assessment for soil and water environments

5.2.1 Risk formation mechanism and suitability classification of plants

5.2.2 Risk assessment methods for soil and water environments

5.2.3 Simulation and regionalization of long-term RWI effects on environments

5.3 Control technology and equipment

5.3.1 Anti-clogging equipment and systems

5.3.2 Irrigation technology and irrigation systems based on risk control

5.3.3 Monitoring and evaluation techniques and methods of RWI

5.4 High-efficiency transfer, storage, and water quality improvement techniques

5.4.1 High-efficiency transmission and distribution technology

5.4.2 High-efficiency storage and water quality improvement technology

5.5 Integrative Reuse Schemes

5.6 Prospects

