

THE WORKING GROUP ON IRRIGATION DEVELOPMENT AND MANAGEMENT (WG-IDM) Closure Report — May 2024

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1. BACKGROUND

Sustainable water management at both resource and system level is not only an important requirement in support of global food production, but also for the livelihood of the rural population and for environment. In addition, there is the important aspect of integrated river basin management where irrigation is generally the major water user. In quite numerous systems there is 'over' irrigation, which may result in waterlogging, salinization and wasting of water. On the other hand, 'deficit' irrigation may result in yield reductions and salinization of the root zone. Therefore, a crucial question is what would be optimal water development strategy and management approach in irrigation under the local conditions. The WG was established in 2015 at the PCTA meeting of October 2015, at Montpellier, France to explore the subjects under its scope from perspective of "schemes" and thus is relevant to the Thematic Area.

The formal mandates of the Working Group, set up in 2015 are following:

- (a) assessment of consumptive use of water for irrigation and resulting water balance at system level;
- (b) water demand management according to available resource(s) and system capacity;
- (c) assessment of water loss in various components of irrigation systems, appraisal of water made available for another use downstream (non-consumptive);
- (d) ground water development and management for irrigation including conjunctive use of surface and groundwater in irrigation, artificial recharge of aquifers from canals "losses" and "excessive" irrigation
- (e) water measuring methods and devices and relevant technology (flow rates and volumes).
- (f) drivers for and resistances at system level to improve irrigation management;
- (g) social issues to be considered along with technical and economical ones;
- (h) management of multi-use hydraulic systems, and interdependence between uses;
- (i) performance evaluation of irrigation schemes and benchmarking;
- (j) ways towards economic performance enhancement (cost reduction and efficiency improvement).

In the "Scoping Document" approved by the Working Group on 9th November, 2016, Chiang Mai, Thailand, it is stated that, considering the possible effects of climate changes, determining what would be the most appropriate irrigation development strategy and management approach under local conditions and the resulting development potential for irrigation are fundamental questions, but the scope of studies to answer these questions will be very broad, and all topics are the same. It was emphasized that it cannot be addressed at the same time and the Group should act step by step. It was expected to be addressed several issues not fully included in past WGs' scope of works, for instance groundwater management and more globally IWRM.

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The relevance of the WG specified as follows:

- (a) the topic of water management in irrigation is relevant to the vision and mission of ICID and of interest for its members, in all countries with a high, medium and low Human Development Index³;
- (b) the WG is expected to contribute to effective implementation of the Strategy Theme Schemes and to other strategy themes for that matter;
- (c) sustainable water management in irrigation is of crucial in many regions of the World, especially in the arid and semi-arid zones where water scarcity and mining of groundwater resources is a well-recognised problem;
- (d) worldwide, there is still confusion on the issue of thrifty use of water. ICID has taken a clear position with respect to this item, based on the paper by Chris Perry (2007). Water saving can only successfully be evaluated by comparing the disposition of water before an intervention and the disposition afterwards. In its activities, especially with respect to water management of irrigation in arid and semi-arid areas, the WG can prepare clear messages with respect to this important issue;
- (e) development and sustainable management of irrigation is part of integrated water resource management, a key issue for achieving human development goals as regards access to quality food, drinking water and sanitation.

The target audience of the working group was managers of irrigation systems, consultants, researchers, government agents, farmers' organizations, manufacturers, and staff of International Organisations working on the topic.

2. ACTIVITIES UNDERTAKEN

In accordance with the mandate, the Working Group (WG) endeavoured to serve as a forum wherein pertinent actors or stakeholders can engage in communication and collaboration aimed at enhancing data collection networks. Furthermore, it seeded to conduct research on methodologies for sustainable water management, spanning from the resource to the systemic level. The group's objectives include the investigation, analysis, and dissemination of information regarding emerging developments, as well as the formulation of recommendations with a primary focus on the water balance approach in irrigation and the climatic impacts on water and agriculture.

WG has convened three workshops centered on its mandate. During these sessions, the activities, and outputs of WG members and observers were presented and exchanged, with the aim of identifying subsequent challenges. These workshops served to foster discourse, promote awareness, and facilitate discussions on water-related matters among the ICID network and on a national scale, engaging both scientists and policymakers. Beside the workshops, the WG has organized some presentations of the WG members at the annual meetings as follows:

❖ The 8th Meeting of the WG-IDM

06 November 2023, Visakhapatnam (Vizag), Andhra Pradesh State, India

Presentation by the members of the WG

- (a) Preparation of the Report on Standards for Irrigation and Drainage by Dr. Sheng-WEI WANG (Chinese Taipei).
- (b) Preparation of the Overview Paper on the Irrigation Development for Publication in Irrigation and Drainage (IRD) by Dr. Sheng-WEI WANG (Chinese Taipei).

❖ The 7th Meeting of the WG-IDM

08 October 2022, Adelaide, Australia

Presentation by the members of the WG

- (a) "Study of ET₀ by using Conventional and Soft Computing Techniques in the Eastern Gandak Project in Bihar, India - A Case Study" by Prof. Dr. L.B. ROY

(Direct Member from India).

- (b) “Irrigation Development & Management Activities in Türkiye” by Ahmet SEREN (Vice Chair/Chair, Turkey).
- (c) Technical Report on Investigating and Documenting the Social and Economic Impact of Irrigation Systems by Dr. Akie MUKAI (Japan).
- (d) A Case Study for Goal A1.2. on Recent Development in Irrigation Drainage Management in Turkey: Irrigation Facilities Spatial Information System by Mr. Ahmet SEREN (Vice Chair/Chair, Turkey).

❖ **International Symposium on Integrated Approaches to Irrigation Management in the Future**

06 October 2022, Adelaide, Australia

Eleven National Committees i.e. Australia, India, Iraq, Iran, Japan, Korea, Sri Lanka, South Africa, Turkey, Uzbekistan, and Zimbabwe shared their country papers.

❖ **Webinar on “Role of ICT Technologies for Sustainable Irrigation Management and Scheduling”**

7 April 2021, Virtual

Particulars

- (a) Role of ICT Technologies for Sustainable Irrigation Management and Scheduling MENA Region-Case studies by Dr. Amgad ELMAHDI (Head of MENA Region)
- (b) “Information and Communications Technology (ICT) Application in Irrigation Projects in Turkey” by Prof. Dr. Yusuf Ersoy YILDIRIM (Dean of Eskisehir Osmangazi University/Turkey).

❖ **The 4th Meeting of the WG-IDM**

05 September 2019, Bali, Indonesia

Presentation by the members of the WG

- (a) Investigating and providing information on the positive amenities, services and goods provided by irrigation systems by Dr. Katsuyuki SHIMIZU (Secretary, Japan).
- (b) Latest research on irrigation management in South Africa (E6 Strategy: Dissemination of useful research outputs) by Mary Jean GABRIEL (Chair, South Africa).
- (c) Outputs of the International Training Workshop on Water Accounting-Concepts and Tools - 23-26 February 2019, Iran by Dr. Narges ZOHRABI (Iran).

Beside these activities, member of the WG gave support for updating Multilingual Technical Dictionary (MTD) within its scope and prepared some reports as follows:

- (a) Technical Report on Investigating and Providing Information on the Positive Amenities, Services and Goods Provided by Irrigation Systems by Dr. Katsuyuki SHIMIZU (Secretary, Japan).
- (b) Technical Report on Drivers and Social Resistances within the Systems to Improve Irrigation Management in Turkey by Ahmet SEREN (Vice Chair/Chair, Turkey).
- (c) Draft Norms and Standards of Irrigation Development and Management by by Mary Jean GABRIEL (Chair, South Africa).

3. CONCLUSION AND RECOMMENDATIONS

Despite the above-mentioned work of the Group Members, it would be appropriate to review the issues stated in the scope document in the newly formed group studies.

Preparations regarding the Goal A - Strategy A1 - Activity 1.1. Develop a program for introducing standards for irrigation systems, Goal A -Strategy A1 – Activity 1.2. Report or case studies on recent development in Irrigation Drainage Management, Goal B -Strategy B1 – Activity 1.14. Report on South-South cooperation for capacity development in the field of irrigation management, Goal C - Strategy C4- Activity 4.17. Overview paper on the Irrigation Development for publication in Irrigation and Drainage (IRD), Goal B - Strategy B3 – Activity 3.1. Assess methods and develop guidelines on relevant water balance approach, Goal E - Strategy E6 - Activity 6.2. Investigate and report on state of research, barriers or locks and promising paths in the field of irrigation management is still going on. Those subjects should be covered in the relevant Group activities.

4. WAY FORWARD

On recommendation of PCTA, the Council in the 74th Meeting of the WG-IDM at 06 November 2023, Visakhapatnam (Vizag)/ Andhra Pradesh State/ India, approved the closure and merger of Workbodies under PCTA with revised mandate on the topics under revised thematic areas:

1. Irrigation and Drainage (Long-term activities)- WGIWM&D, WG-NWREP, WG-LDRG;
2. Natural Resources (Medium-term activities)- WG-RWH, WG-SCER, WG-WFE-N, WG-IDSST;
3. Climate Change & Impacts (Medium to long-term activities) – WG-CLIMATE; and
4. Sustainable Development (Long-term activities) WG-I&O MVE, WG-HIST, WG-CDTE.

The Working Group on Irrigation Development and Management (WG-IDM) integrated with the Working Group on Sustainable On-Farm Irrigation System Development (WG-SON-FARM) together with the Working Group on Water Saving in Irrigated Areas (WG-WATS) and the Working Group on Modernization and Revitalization of Irrigation Schemes (WG-M&R) under the name of the Working Group Irrigation Water Management and Development (WGIWM&D) within the scope of Theme 1. Irrigation and Drainage.

It also integrated with the Working Group on Sustainable Development of Tidal Areas (WG-SDTA) together with the Working Group on Adaptive Flood Management (WG-AFM) and the Working Group on Modernization and Revitalization of Irrigation Schemes (WG-M&R) under the name of the Working Group Sustainable Regeneration of Coastal Environment (WG-SCER) within the scope of Theme 2. Natural Resources.

Furthermore, it integrated with the Working Group on Institutional and Organizational Aspects of Irrigation/ Drainage System Management (WG-IOA) together with the Working Group on Value Engineering (WG-VE) and the Working Group on Modernization and Revitalization of Irrigation Schemes (WG-M&R) under the name of the Working Group on Institutional and Organisational Aspects of Modernisation Irrigation Development and Management Supported by Value Engineering within the scope of Theme 4. Sustainable Development.

For this reason, it is necessary to distribute the topics and objectives in the scope document under these three groups. Although the merger of groups has been accepted in PCTA, the path to be followed regarding the integration of groups needs to be clarified. The distribution of group members within the newly determined groups is also one of the important issues that need to be addressed.

