
WORKING GROUP ON LAND DRAINAGE (WG-LDRG)

Updated Scoping Document

1. Introduction

Irrigation is always accompanied by drainage. The drainage (natural or constructed) should be carried out wherever irrigation takes place. Even in rainfed agriculture in many parts of the world, drainage is necessary. That is why a significant part of discussions at the ICID meetings is on drainage.

There has been a working group on drainage issues in ICID since 1983. It seems, however that ICID cannot be imagined without a drainage workbody, due to the importance of the drainage as an integral part of the water management.

The Working Group on Sustainable Drainage (WG-SDRG) was established in 2014 for a period of 6 years after completion of the mandate of the former Working Group on Drainage (WG-DRG) in 2013. The WG-SDRG concluded in 2019 however, based on the recommendation of PCTA, the 70th IEC approved its extension for one more year up to 2020 to develop a scoping document for the new WG (resolution IEC DR-2/70 of 70th IEC minutes).

In this regard, Scoping Document prepared to establish a new Drainage Working Group to follow and update the mandates and mission of the former WG-SDRG.

2. Duration of the WG

The drainage Working Group of ICID has been active since 1983 for nearly 40 years. Still a lot of works is remained and this is the reason why ICID has decided to establish a new WG for the coming years to follow the works already done. Now, it is felt that the necessity of having a permanent working group on drainage must be considered. This, of course, depends on the policies of PCSO and PCTA. In this proposal a six-year term is considered provided that the mandate and the work plan of the WG be revised after three years.

3. Important issues of the land drainage

With respect to previous activities of the two WGs, ICID Vision 2030 and new developments in drainage, broadly speaking the following aspects are of major importance:

- (a) Drainage should be considered as an important element of IWRM. Interaction between irrigation and drainage should be defined and optimized;
- (b) Environmental issues should gain more attention. In this regard, the new techniques such as bio-drainage, dry drainage, controlled drainage, agroforestry and the like must be given due attention.
- (c) Water scarcity and the resulting need for its efficient use is a global challenge. There are also increasing land use intensification which impacts on both water quality driven by irrigation and quality of drainage water. Due attention should be given to irrigation water reuse to conserve water and maintain a healthier environment in receiving drainage water bodies.
- (d) The global climate change might have an important impact on drainage. Assessment of drainage needs and promotion of risk assessment techniques under the changing environment should be given due attention.
- (e) Institutional and organisational arrangements for modernisation or revitalisation and resulting required operation and maintenance needs to be given due importance;
- (f) There are no internationally well accepted standards and associated codes of practice on drainage design, installation and evaluation. To address this issue there is an urgent need for their development. This will provide a bottom-line for future drainage development internationally. The codes of practice should cover both conventional and non-conventional methods as well as drainage of rainfed agriculture.
- (g) New materials and technologies are making inroads like pipeline based last mile distribution networks and solar power etc. which need evaluation and standardization for application in different areas. Monitoring managing mechanisms based on ICT techniques also need incorporation in the new and existing drainage networks.

- (h) Planning of drainage networks considering the geo-hydrological conditions for devising area specific solutions with interconnection through multiple aquifers also need consideration and planning.
- (i) Operation, maintenance and management of drainage schemes should be followed in accordance with the irrigation schemes including handling of political, economic, social and environmental aspects.
- (j) The issue of drainage of areas subjected to natural flooding is also quite critical from agricultural productivity point of view. Many a times, agriculture has to lose one working season in such conditions. Setting up of drainage networks for managing such areas also need attention.
- (k) Drainage is viewed as a non-revenue generating activity and its effects on affecting the productivity of land and outputs is often not quantified. These benefits are needed to be quantified for providing and managing drainage networks in a sustainable way.
- (l) Promotion of community participation in maintenance and management of drainage networks just like the canal networks, also need be promoted. Finding systems and economic solutions need be investigated.
- (m) Dealing with fire in peat forest and plantation, drainage for managing peat land particularly in Indonesia. How to control water table under optimum condition for crop and fire prevention. Drainage is not only to drain water but also to maintain the water level in certain level.
- (n) The best structure hydraulic for control drainage.
- (o) How the system information technology in drainage development was contributed in supporting the smart agriculture development (including computerize, automatic sensor etc.)
- (p) In this Scoping Document, the relevant aspects of each of these items will be reviewed and the objectives, state of knowledge on the topic and the Workplan will be presented.

4. Objectives

4.1 Relevance of the Working Group

4.1.1 The relevance of the WG can be specified as follows:

- (a) The topic of "Land Drainage" is relevant to the vision and mission of ICID and of interest for its members;
- (b) The WG is expected to contribute to effective implementation of the Strategy Theme Schemes and to other strategy themes for that matter;
- (c) It may be expected that in the coming period most of the activities in drainage will be in the fields of conventional as well as non-conventional drainage methods such as bio-drainage, dry-drainage, controlled drainage and drainage of rainfed agriculture. Another important activity will be initiation of the codes of practice for drainage design.

4.2 Relevance of the Working Group to the scope of the Thematic Area

4.2.1 For the relevance of the WG to the scope of the Thematic Area the same argumentation is applicable as shown under the relevance. Most of the activities in drainage will be in the field of conventional as well as non-conventional drainage methods. This concerns the technical, institutional and environmental aspects in which drainage water reuse is very important.

4.3 Existing gap that the Working Group is expected to fill

4.3.1 Other ICID WGs or Task Forces (TF) that have a related scope of work are: Working Group on Environment (WG-ENV), Working Group on Climate Change and Agricultural Water Management (WG-CLIMATE), Task Force on Value Engineering (TF-VE), Working Group on Sustainable On-Farm Irrigation System Development (WG-SON-FARM), Working Group on Modernization and Revitalization of Irrigation Schemes (WG-M&R), Working Group on Water Saving for Agriculture (WG-WATS), Working Group on Use of Nonconventional Water Resources for Irrigation (WG-NCWRI).

5. State of knowledge on the topic

5.1 Other International Organisations that are working on the subject

5.1.1 There are several other International Organisations that have programs and activities on this topic. This especially concerns the:

- (a) Food and Agriculture Organisation of the United Nations (FAO);
- (b) Research institutes such as Agricultural Research Service (ARS) of the U.S. Department of Agriculture, International Institute for Land Reclamation and Improvement (ILRI), Drainage Research Institute of Egypt, Drainage and Reclamation Institute of Pakistan, etc.
- (c) Universities such as Wageningen University and Research, Purdue University, North Carolina State University, etc.
- (d) International organisations such as the World Water Forum (WWF), World Water Council (WWC), World Bank, etc.
- (e) Professionals on water studies such as International Water Management Institute (IWMI), etc.

5.2 Mandate of the Working Group

5.2.1 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 promote drainage as part of integrated water resources management. In this regard exchange of information, knowledge and experience among the WG members in order to be up to date with new developments, methods and approaches. Prepare and present reports and/or case studies on recent developments in the countries that are represented in the WG; organise international drainage workshops,
- (b) To collect and review manuals, guidelines, codes of practice and standards on drainage schemes of various countries and prepare universal draft standards,
- (c) To promote sustainable approaches for drainage and related projects through a balanced integration of environmental, economic, and social and cultural aspects. In this regard nonconventional drainage methods such as bio-drainage, dry-drainage, controlled drainage and reuse of drainage water will be given due attention.
- (d) To prepare an overview paper on the state of the art on the topic for publication in Irrigation and Drainage (IRD).
- (e) To hold drainage conferences and workshops with collaboration of NCs and close collaboration to hold two International Drainage workshops (14th and 15th IDW).
- (f) Collecting data of the World Drained Area and keep it updated through WG members and NCs information according to Goal E, Strategy E5 (Compilation of Global Data Sets on Irrigation and Drainage), Clause 5.3 (Datasets for Drainage Area) of Road Map of ICID Vision 2030.

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

5.3.1 International Organizations can contribute to the activities of the WG by nominating Permanent Observers (PO). Works and achievements of the WG can be presented at the occasion of events organized by International Organizations. The important documents will be disseminated through the web page of the WG.

6. Work Plan

6.1 Scope

6.1.1 The WG is expected to investigate, analyse, and disseminate information on new developments and to formulate recommendations with respect:

- (a) To release documents on the new drainage techniques such as bio-drainage, dry-drainage, controlled drainage, agroforestry, etc.
- (b) To release documents on the drainage water quality and reuse of drainage water in irrigation,
- (c) To discuss the impact of climate change on drainage needs,

- (d) To prepare draft standards and associated codes of practice related to drainage design, installation and evaluation. The codes of practice should cover both conventional and non-conventional methods as well as drainage of rainfed agriculture.

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

6.2 Target audience

6.2.1 The target audience for this working group will be managers of irrigation and drainage schemes, researchers, consultants, manufacturers, government officials, farmer's representatives and staff of International Organisations working on the topic.

6.3 Outputs

6.3.1 The following direct and indirect outputs can be expected from this WG:

- (a) Indirect output sharing of knowledge and experience by representatives of NCs will also enable them to disseminate this knowledge within their country;
- (b) Condensed overview of existing key books, manuals, guidelines and other relevant publications on the topic;
- (c) the WG is expected to organise workshops, seminar or symposium on the occasion of international ICID meeting and collaborating to organize International Drainage Workshops (IDW);
- (d) ICID codes of practice and standards for drainage systems;
- (e) Overview paper on the state of the art for publication in Irrigation and Drainage (IRD).

6.4 Timelines

6.4.1 While drainage is a very important topic in light of its role in support of global food production, and due to its previous activities starting from 1983, it is recommended that the term of this WG will be set at six years from 2020 to 2026 as discussed earlier. That term is divided into 2 periods of three consecutive years. At the end of the first three years i.e., 2023, the activities and mandates of the WG will be evaluated and revised by the WG. The timeline would have to be based on the scope of work and the expected output. Details of the timeline would have to be formulated and refined during the inaugural meeting of the WG. However, a draft proposal is shown in **Appendix A**.

6.5 Collaborators and dissemination strategy

6.5.1 All members and observers of the former WG-SDRG 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.

Note: Membership will be suspended when the member does not attend the WG for two consecutive meetings (self or representative) and cancelled after no show in three consecutive meetings.

6.5.2 Each National Committee is allowed to nominate four professionals related to drainage provided one of them is preferred to be a young professional.

6.5.3 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.

6.5.4 The dissemination strategy would have to be based on 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





Appendix A to para 6.4.1

SIX YEARS ROLLING PLAN

Item of Mandate	2020	2021	2022	2023	2024	2025	2026	Actor(s)
Mailing of Scoping Document to members of WG-SDRG and NCs	█							Central Office
Comments receiving on Scoping Document,	█							Established Team
Finalising Scoping Document and detailing of Work plan	█							Established Team and Central Office
Invitation to NCs for nominations	█							Central Office
Submission of nominations	█							National Committees
1st Meeting Sydney, Approval of document and acceptance of nominees		█						Members and Permanent Observers
Exchange of information and overview of key books and other publications		█	█	█	█	█	█	Members and Permanent Observers
Collecting data of world drained area		█	█	█	█	█		Members and POs
Collaboration to organise the 14 th international drainage workshop, if any		█						Members, POs and Central Office
Preparation and presentation of reports and/or case studies		█	█	█	█	█	█	Members and POs
Collecting and reviewing manuals, guidelines, codes of practice, etc.		█	█	█	█	█	█	Members and POs
2nd Meeting of WG in the next meeting of ICID, including Workshop,			█					Members and POs
Preparing ICID codes of practice and standards for drainage systems		█	█	█	█	█	█	Some members
3rd Meeting of the WG				█				Members and POs
Evaluation of WG activities and update mandates				█				Some Members
Preparation of an overview paper on state of the art for publication in <i>IRD Journal</i>				█	█	█	█	Some members
4 th Meeting of ICID including Workshop					█			Members and POs
Collaboration to organise the 15 th international drainage workshop, if any					█	█		Members, POs and Central Office
5 th Meeting of ICID						█		Members and POs
6 th Meeting of ICID including Workshop							█	Members and POs
Planning for establishing the new WG							█	Some Members

