

**Minutes of the 1st Meeting of the
WORKING GROUP ON IRRIGATION DEVELOPMENT AND MANAGEMENT (WG-IDM)**

9 November 2016, 13.30-15.00 hours (Session I)
9 November 2016, 15.30-17.00 hours (Session II)
Chiang Mai, Thailand

Strategy Theme: Schemes

Presented by the Chair

Year of Establishment: 2015

Completion of the Mandate: 2021

Scope: (a) assessment of consumptive use of water for irrigation and resulting water balance at system level; (b) water demand management; (c) assessment of water loss in various components of irrigation systems; (d) appraisal of non-consumptive use of water; (e) water measuring methods and devices and relevant technology; (f) drivers and resistances to improve water management at system level; (g) social issues to be considered along with technical and economical ones; (h) management of multi-use hydraulic systems; (i) technical performance evaluation of irrigation schemes and benchmarking; (j) ways towards **economic** performance enhancement (cost reduction and efficiency improvement).

Members Present: (1) Vice President Hon. François Brelle (France); (2) Ms Mary Jean M. Gabriel (South Africa); (3) Dr. Wu Jingwei (China); (4) Mr. Ming-Young Jan (Chinese Taipei); (5) Dr. Narges Zohrabi (Iran); and (6) Mr. Ahmet Şeren (Turkey).

WG-IDM Minutes Item 1: Establishment of the new working group – Designation of new chair

1. WG Chair welcomed the members and informed the group that since the last informal meeting held in Montpellier in October 2015, not much has been done except amendment to the mandate and modification of the scoping document taking into account the numerous observations made by the members at Montpellier meeting. The revised scoping document was circulated to the members of the WG in October 2016.

WG-IDM Minutes Item 2: Approval of IDM Scoping Document

2. The group agreed that the WG need to focus on the approach of water balance in irrigation, with the objective to develop appropriate guidelines in this respect. As a second step, the WG aim should be to address the issues and challenge related to ensuring success of relevant and efficient water management in irrigation on a system level (i.e. drivers and resistances, social issues, management of multi-use systems, technical and economical performance). Dr. Wu Jingwei (China) suggested that there is a need for the WG to propose solutions to governments. The group agreed, but insisted on the necessary clarifications within ICID with regards to the water accounting principle, the methods and tools prior to addressing the governance issues and formulating the recommendations in this respect. The new Scoping Document approved by the WG is given as **Annex 1**.

3. Some members were of the view that name of the WG should be changed to 'IMD' from "IDM" keeping in view the focus of the WG on Water Management for Irrigation, however, no decision was made in this respect.

WG-IDM Minutes Item 3: ICID Action Plan 2030 – Activities on irrigation development and management

4. During the meeting, WG Chair presented the draft Action Plan 2030 of the WG prepared by ICID Central Office in consultation with him. The WG reviewed the Action Plan 2030 (AP-2030) and updated/modified it keeping in view the revised scope/mandate of the WG and the duration of the WG (**Annex 2**). The final goal proposed at the end of the WG mandate will be developing a guideline on the 'Water balance approach in irrigation systems'. The WG recommended to PCTA that a work body on groundwater be established. *Later, PCTA during its meeting noted that there were no volunteers to move the topic forward and no Scoping Document was prepared. PCTA, after discussion, decided that the groundwater issue be dealt as part of the mandate of the WG-IDM.*

WG-IDM Minutes Item 4: Presentation by the members

5. During the meeting, two very interesting presentations were made by members viz. (i) Mr. Ming-Young Jan's presentation on "Water Resources for Irrigation in Taiwan", relating to IDM scopes and experiences in Chinese Taipei, with a special focus on GIS for precise irrigation management, and (ii) Ms Mary Jean M. Gabriel's on "Irrigation Development and Management in South Africa".

WG-IDM Minutes Item 5: Exchange of information, knowledge & networking – website

6. WG suggested to approach the Central Office to set up a Website for the WG and initially upload the following information: (a) Scoping Document, (b) Membership of the WG, (c) Minutes of the meeting etc. Further developments of the Website of the WG would be discussed during the intermediate meetings (virtual) to be conducted during 2017.

WG-IDM Minutes Item 6: Updating Multilingual Technical Dictionary (MTD)

7. This item of updating MTD could not be discussed during the meeting, as the priority was the finalization of the scope/mandate and actions to be included in the Work Plan. WG agreed to discuss this item during the next meeting of the WG at Mexico in 2017.

WG-IDM Minutes Item 7: Review of membership of the working group

8. During the meeting, the group reviewed the nominations received for the membership of the WG and unanimously decided to accept Dr. Wu Jingwei (China), provisional member of 2015 and new nominations of Dr. Narges Zohrabi (Iran), Mr. Ahmet Şeren (Turkey) and Dr. Amgad Elmahdi (Australia) as members as they were either present or contributed to the activities of the WG. WG also approved continuation of Mr. Mohammad Kazem Siah (Iran), provisional member of 2015, as provisional member and new nominations of 2016 of Eng. Abd Elsalam Mohamed Salih Idriss (Sudan), Mr. G.L. Bansal (India), Dr. Hanan Hussein Abbood (Iraq) and Ms. Maryam Naeem Odaa Al-Obaidy (Young Professional, Iraq) as provisional members as they were not present.

9. During the meeting, WG Chair Mr. François Brelle expressed his inability for his regular presence in the meeting of the WG and continue as Chairman. He therefore offered his resignation to the group, and requested that the WG to elect a new chairperson. Ms Mary Jean M. Gabriel (South Africa) and Mr. Ahmet Şeren (Turkey) presented their candidature. After discussion, the WG agreed unanimously to designate Ms. Gabriel as Chair and Mr. Şeren as Vice-Chair. Both were warmly congratulated for their commitment to lead the group. Mr. Brelle informed the Group that he would continue as a member of the Working Group. Membership status is given in **Annex 5 (page 33)**.

WG-IDM Minutes Item 8: Any other business**Webinar/ web-based seminar**

10. WG could not discuss this item due to paucity of time and agreed that this issue will be reviewed during next meeting of the WG at Mexico City 2017.



WORKING GROUP ON IRRIGATION DEVELOPMENT AND MANAGEMENT (WG-IDM)

SCOPING DOCUMENT

Approved by the Working Group on 9th November, 2016 Chiang Mai, Thailand

Introduction

Developing irrigation is undoubtedly essential for meeting the challenge of properly feeding the planet for the next decades. But it will not be achieved without managing water in irrigation, aiming ultimately at producing more food with less water. Water management in irrigation must deal with quantities withdrawn from natural environment or made available at the end of another usage, and returning to environment or to another usage, but also with the quality of abstracted and returned water. It requires therefore a clear distinction, understanding and application of 'consumptive' and 'non-consumptive' water use, with beneficial and non-beneficial irrigation on the one side, and recoverable and non-recoverable drainage on the other (Perry, 2007)¹. It is commonly understood that 'non-consumptive' water use does not substantially change the withdrawn water. But one must keep in mind that a 'substantial change' may be defined differently in different countries (FAO, 2010)².

Water from various origins is used to supply irrigation: Surface water from close resource or transported on long distance, groundwater from shallow water tables or from deep aquifers as well. Multiple resources may be available at the same place, differing in operation cost, in quantity and in quality. Other usages often compete with irrigation. Therefore, an assessment of the total amount of water available during an irrigation season is essential for determining the optimal consumptive as well as non-consumptive use, the latter remaining available for a second usage. Dependent on the local conditions, groundwater irrigation may be more efficient than surface water schemes. Both may be used together on the same spot. However, especially in arid and semi-arid conditions, there is often a need to stop over-exploitation and ensure sustainable use by technological and institutional interventions so that, where possible, storages could be used during the drought periods.

There are many successful practices, and research findings potent works and non-conventional pathways of achieving irrigation development and management in a way which will allow increasing food production while decreasing pressure on water resources. A few of them are rated as outstanding contributions in water conservation across the world. Many go unrecognized, as well. There is urgent need to explore all those innovations and share with stake holders i.e. irrigation managers and policy makers. There is also need to strengthen the process of transfer and dissemination of water management skills to the farmers, their organizations, and to the organizations in charge of water management at system level, from professional experts, consulting firms, international organizations, through feedback on success stories as well as lessons learnt from failures.

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.

Objectives

Relevance of the Working Group: The relevance of the WG can be 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;

¹ Perry, C., 2007. Efficient irrigation; inefficient communication; flawed recommendations. *Irrigation and Drainage*, v. 56, no. 4, p. 367-378.

² Amit Kohli, Karen Frenken, Cecilia Spottorno - AQUASTAT Programme – FAO, 23 September 2010, revision 23 May 2012

³ *Low Human Development Index*. Most of the countries in Africa, several countries in Asia, one country in Central America and most of the smaller countries in Oceania; *Medium and High Human Development Index*. Most of the Eastern European countries (including Russia), most of the countries in Central and South America and in Asia (including China, India, Indonesia and Pakistan) and several countries in Africa; *Very High Human Development Index*. Most of the countries in Western and Central Europe, North America and some countries in Central and South America and in Asia, the larger countries in Oceania and one country in Africa.

- (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.

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

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 irrigation development strategy and water management approach in irrigation under the local conditions. The WG will be exploring the subjects under its scope from perspective of "schemes" and thus is relevant to the Thematic Area.

Existing gap that the Working Group is expected to fill

WG-IDM will address several issues not fully included in past WGs' scope of works, for instance Groundwater management and more globally IWRM. Working on both irrigation development and its management, it will allow bridging possible divides through integrated approaches. Taking into consideration the actual multiple use of water in irrigation schemes should allow better assessing the global water needs, quantity wise as well as quality wise.

Other ICID WGs or Task Forces (TF) that have a related scope of work are: WG-SON-FARM, WG-DROUGHT and WG-CROP. The scope of new WG-WSI (now WG-WATS), WG-R&M (now WG-M&R), WG-IMT (now WG-IOA) and WG-DRG (now WG-SDRG) is also more or less related to the issues to be addressed by WG-IDM.

The WG-IDM has taken good note of the mandate and activities of these Workbodies when preparing this Scoping Document. All these WG, under Theme Leaders' guidance, will:

- (a) keep paying attention that neither redundancy nor gap will exist between their respective work.
- (b) coordinate their work so as to enhance their complementarity.

For instance, WG-IDM should deal with water management at both basin (IWRM) and system (or scheme) levels, irrigation management at field level being within WG-SON-FARM's scope, and re-use of treated waste waters within WG-PQW's one.

State of knowledge on the topic

Other International Organisations that are working on the subject

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) most of the 15 research institutes that are organised within the CGIAR Consortium, especially IWMI, ICARDA, IFPRI, ICRISAT;
- (c) International Fund for Agricultural Development (IFAD);
- (d) other research institutes and Universities;
- (e) professional international water associations, like: IAH, IAHR, ICOLD, IHA, IWA, IWRA, as well as national ones not incorporated within ICID;
- (f) multilateral development banks: ADB, AFDB, IADB, WB;
- (g) international partnerships: GWP, OECD, WWC;
- (h) institutes for international education: UNESCO-IHE...

The niche that ICID is expected to fill in this area

The specific niche that this WG can fill on the issue bulleted under "Scope" can be formulated as follows:

- (a) to exchange information and network on the issues in order to be up to date with new developments, methods and approaches;
- (b) to prepare and present reports and/or case studies on recent development of irrigation in the countries that are represented in the WG, and in least developing countries which benefit from cooperation with the countries that are represented in the WG;

- (c) to identify the examples or the opportunities of South-South cooperation in irrigation development and management improvement;
- (d) to collect and review manuals, guidelines as well as research works on sustainable water management in irrigation (at system and basin levels);
- (e) to consult with ICID Central Office on the continuation of data collection with respect to developments in irrigation management methods in the Member Countries (MC);
- (f) to organise international workshops, seminars or symposia on the issues.

This can be the basis to present recommendations and if mature a position paper on key issues on developing irrigation and sustainable water management, and in fine to prepare an overview paper on the state of the art on the topic for publication in *Irrigation and Drainage (IRD)*.

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

International Organisations 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 Organisations.

Work Plan

Refer Annex 2 of the proposed tentative Work Plan, which of course has to be enriched by the WG itself during the first step of its work.

Scope

The core question is "What would be the optimal irrigation development strategy and water management approach in irrigation under local conditions, taking into account the probable effects of climate changes? What is the resulting development potential for irrigation?"

Given the whole context, the scope of works for answering this question would be too broad. All the related issues could not be addressed in the same time, and the Group should act step by step, the first global step being identifying the conditions for good water management in irrigation, the issue of developing irrigation being to be addressed afterwards. Within this global first step in respect with water management, a major issue is how to properly approach the water balance in irrigation.

Therefore, the WG is expected to investigate, analyse, and disseminate information on new developments and to formulate recommendations focusing on the main issue of water balance approach in irrigation. Subsequently, the action plan for the coming three years will concentrate on:

- (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).

As a further step, the WG will address the following issues

- (a) drivers for and resistances at system level to improve irrigation management;
- (b) social issues to be considered along with technical and economical ones;
- (c) management of multi-use hydraulic systems, and interdependence between uses;
- (d) performance evaluation of irrigation schemes and benchmarking;
- (e) ways towards economical performance enhancement (cost reduction and efficiency improvement).

Attention should be drawn on the fact that the recommendations made by WG-IDM may be:

- (a) "common", i.e. "universal" relevant in all cases and under various conditions,
- (b) Specific to particular regions or sub-regions.

Target audience

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

Outputs

The following outputs can be expected from this WG:

- (a) although it is an indirect output sharing of knowledge and experience by representatives of NCs will also enable them to disseminate this knowledge within their country;
- (b) guidelines on sustainable water management in irrigation;
- (c) condensed overview of existing key books, manuals, guidelines and other relevant publications on the topic;
- (d) the WG is expected to organise at least one workshop, seminar or symposium in three years at occasion of an international ICID meeting;
- (e) overview paper on the topic for publication in *Irrigation and Drainage (IRD)*

Timelines

While irrigation development and water management in irrigation are very important issues in light of its role in support of global food production it is recommended that the initial term of this WG will be set at six years. 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.

Collaborators and dissemination strategy

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 PO, or ad hoc basis.

The dissemination strategy should 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.



Annex 2 [Appendix XIX, Item 3]

ICID ACTION PLAN VISION 2030 – ACTIVITIES BY WORKBODIES

Name of the Chairman and members filling this questionnaire: Ms. Mary Jean M. Gabriel (Chairperson), Dr. Katsuyuki Shimizu (Secretary), VPH Francois Brelle (Former Chairman)

Date: 9th November 2016

		Outcomes/ Outputs	Milestone for Year 2017	Milestone for Year 2018	Milestone for Year 2019	Milestone for Year 2020	Milestone for Year 2021
Goal 1: Enable higher crop productivity with less water and energy under climate change conditions	1.1 Report or case studies on recent development	Case studies Presented in WG meetings	4 to 6 case studies to be presented at WG meeting in Mexico	4 to 6 case studies to be presented at WG meeting in Canada			
	1.2 Assess methods and develop guidelines on relevant water balance approach	Guidelines		Report on state of the art		Draft guidelines	Release the finalised guidelines
Goal 2: Be a catalyst for change in policies and practices	2.1 Identify drivers and social resistances within the systems to improving Irrigation management	Report			Prepare a draft report	Release a draft report	Release the finalised report
Goal 3: Facilitate exchange of information, knowledge and technology	3.1 Organize Workshop, Seminar and Symposium			Workshop on water balance approach and how to conceive guidelines			
	3.2 Condensed overview of existing relevant documents and practical examples on water balance approach		Interim report	Final report			
	3.3 Overview paper on the topic for publication in Irrigation and Drainage (IRD)	Paper		Preparation of first paper	Submission of first paper for IRD		
Goal 4: Enable cross disciplinary and inter-sectoral engagement	4.1 Workshop (linked to 3.1)						
Goal 5: Encourage research and support development of tools to extend innovation into field practices	5.1 investigate and report on state of research, barriers or locks and promising paths in the field of irrigation management					Draft report	Final report
Goal 6: Facilitate capacity development	6.1. Report on South-South cooperation for capacity development in the field of irrigation management					Draft Report	Final report



