



## **Working Group on Water Management in Water Stressed Regions (WG-DROUGHT)**

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### **Closure Report**

#### **Background**

ICID established the Working Group on Irrigated Agriculture under Drought and Water Scarcity (WG-IADWS) in 1996 after merging the two erstwhile Working Groups, namely, Working Group on 'Highly Water Stressed Areas and the Working Group on Impact of Drought on Irrigated Agriculture'. With changing times, the Working Group on Water Management in Water Stressed Regions (WG-DROUGHT) came into being in 2008 with a revised mandate of three Themes as follows:

- i. Drought Management Strategies: To capture field experiences of the implementation of drought risk management strategies.
- ii. Coping with water scarcity: (a) Critical evaluation of the validity of the crop water requirement computations based on climate data as a tool to be used in coping with water scarcity; (b) Approaches and strategies for incorporating economic justification when deciding on the amount of water to be allocated for agricultural production; (c) Re-defining, as necessary, the conventional irrigation efficiency concept; and (c) Design, operation and maintenance of sand dams – Under-ground water reservoirs.
- iii. Rainfall management for sustainable agriculture: Innovation and implementation of smart rainfall management technologies.

In 2014 the Theme II mandate was again changed to show that due to its complexity, the Working Group would not be addressing re-defining the conventional irrigation efficiency concepts. The new Theme II mandate was:

Coping with water scarcity: (a) Computations based on climate data as a tool to be used in coping with water scarcity; (b) Approaches and strategies for incorporating economic justification when deciding on the amount of water to be allocated for agricultural production; (c) Design, operation and maintenance of sand dams – Under-ground water reservoirs.

#### **Activities Undertaken**

In order to address the mandate, the Working Group determined that it would establish three teams, one for each Theme of the mandate, and each member of the working group would select which team or teams they would participate on. Following Theme Leader were selected for each team:

- i. Prof. Chang-Chi Cheng, (Chinese Taipei)
- ii. Mr. Mohammad Sadegh Jafari (Iran)
- iii. Mr. Clarke Ballard (Australia)

It was determined by the Working Group that the final output would be a technical paper with three chapters, one for each Theme.

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Each Team solicited input from all members of the Working Group and from the National Committees. Response was very limited which made it hard for the Theme Leaders to provide a wide variety of experiences and data.

A Workshop on “Developing Management Strategies for Coping with Drought and Water Scarcity” was held during the ICID – IEC meeting in Mardin, Turkey on 2 October 2013. Seven papers were presented at that Workshop which gave each of the Theme Leaders some additional information for their final documents. The Working Group is in the process of bringing out a publication on “Water Management in Water Stressed Regions.”

Brief summary of activities of the WG-DROUGHT is at **Annex 1**.

### **Conclusions and Recommendations**

The three Theme Leaders found that it was very difficult to obtain information on management of droughts from ICID member countries which made it difficult to complete the mandate. Requests for information sent to National Committees went unanswered.

From the limited response obtained, it was apparent that management of droughts is an evolving process in many countries. Drought management efforts cover a wide range activity, from very little management efforts to nationwide relief efforts. It became apparent from the Working Group activities that much effort remains to be done in managing droughts on various levels, i.e., local level, State or area level, and national level. Countries that have initiated some form of advanced drought management have overcome many of the problems created by a natural drought.

The Working Group would have been able to provide better results if the membership of the WG could have been expanded to include those countries that have had good results for managing droughts and those countries that have experienced extensive drought conditions.

### **Way Forward**

Much work remains to be done to fully understand and evaluate actions that need to be taken and that are already being taken to eliminate or reduce the impacts of water shortages to agriculture. This is particularly critical for those situations where water shortages are occurring due to changing conditions such as; 1) conversion of agricultural water to municipal and industrial purposes, 2) Conversion of agricultural water to environmental purposes, and 3) climate change.

Therefore we recommend that a Working Group be formed that addresses actions that could minimize or eliminate impacts of water shortages due to reasons other than natural droughts.



### SUMMARY OF ACTIVITIES OF WG (2008-2015)

1. **2008-09** — The WG was established in 2008 and held its 1<sup>st</sup> meeting on 15 October 2008 at Lahore, Pakistan. Dr. Saeed Nairizi, Chairman of the erstwhile WG suggested to the core group of new WG to update the main outputs of the erstwhile WG covering the following five topics (i) Literature review and data base; (ii) Drought indices; (iii) Drought management strategies; (iv) Drought prediction; and (v) Non-conventional use of water for agriculture during 2009 and make the material ready for publication in the form of a book. As part of mandate of new WG, following three thematic areas were formulated (i) Drought management strategies, (ii) Coping with water scarcity, and (iii) Rainfall management for sustainable agriculture.
2. **2009-10** — At 2<sup>nd</sup> meeting of the WG held at New Delhi, India (2009), VPH Franklin E. Dimick (USA), Mr. Mohd. Sadegh Jafari (Iran) and Dr. Abraham Mehari Haile (The Netherlands) were elected as new Chairman, Vice-Chairman and Secretary of the WG, respectively. Dr. T.B.S. Rajput (India) was also elected as a new member of the WG. The WG circulated a draft document of the erstwhile WG titled 'Irrigation under Drought and Water Scarcity' to the members for their comments and revisions, if any. Members deliberated during the meeting on concept and ideas on how to approach the three thematic areas.
3. **2010-11** — Dr. Benjamin de León Mojarro (Mexico) was elected as a new member of the WG in 2010 at Yogyakarta, Indonesia. The WG approved publication on "Irrigation under Drought and Water Scarcity" in a book format. M/s. Mahab Ghodss Consulting Engineering Company of Iran had offered to sponsor partially the publication cost of the Book. WG requested the member countries to arrange for supplementary funding for the publication. WG identified topics to be considered under three themes after extensive discussion.
4. With the new title "Drought Management Strategies in water stressed/scarce regions" under Theme 1, Prof. Chang-Chi Cheng (Chinese Taipei) was nominated as Theme Leader of Theme 1 and Mr. Mohammad Sadegh Jafari, Vice-Chairman (Iran) was nominated as the Theme Leader of Theme 2 under "Coping with Water Scarcity". Dr. Abraham Mehari Haile, Secretary (The Netherlands) volunteered to cooperate and assist the Theme Leader 2. It was agreed to modify the title of Theme 3 as "Rainfall Harvesting and Management for Sustainable Agriculture in Water Stressed/Scarce Regions" and Dr. Ballard (Australia) was nominated as its Theme Leader. It was agreed that the three Theme Leaders and the concerned members would produce a comprehensive single document by 2014.
5. **2011-12** — Fourth meeting of WG was held at Tehran (Iran) in October 2011. Dr. Kiwook Park (Korea) and Dr. Takanori Nagano (Japan) were accepted as Member of the WG. Three theme leaders presented papers on their experience and work plan for the theme. WG agreed that the Theme Leaders would present intermediate outputs at the WG meeting in June 2012 at Adelaide, Australia and a workshop would be organized during 2013 meeting in Turkey to discuss draft final findings of the WG. WG publication on "Irrigation under Drought and Water Scarcity" was under final stages.
6. **2012-13** — During the WG meeting held in 2012 at Adelaide (Australia) presentations were made by theme leaders/WG Chair on three themes. WG accepted membership of Mr. Clarke Ballard (Australia), Dr. Ir. Gurhan Demir (Turkey), and Dr. Hakan Aksu (Turkey) as Young Professional. WG approved the publication on 'Irrigation under Drought and Water Scarcity' although events referred in the documents relate to the period 2004-2007. The WG also approved organization of an International Workshop on 'Developing Management Strategies for Coping with Drought and Water Scarcity' during the First World Irrigation Forum (WIF1).



**INTERNATIONAL COMMISSION ON IRRIGATION AND DRAINAGE (ICID)**

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7. **2013-14** — In 6<sup>th</sup> meeting of the WG in October 2013 at Mardin (Turkey) Mr. Clarke Ballard was accepted as Secretary in place of Mr. Abraham Mehrari Haile (The Netherlands). WG organized an International Workshop on ‘Developing Management Strategies for Coping with Drought and Water Scarcity’ during World Irrigation Forum in at Mardin. Seven of the accepted nine papers were presented and discussed during the workshop. WG was introduced with the Integrated Drought Management Program (IDMP) which was being implemented by WMO in collaboration with GWP and in cooperation with other international organizations. Three theme leaders also presented progress of work in respect of their respective themes. The WG decided on a single publication with 3 chapters based on the 3 themes to be presented at the 2014 meeting in Korea.
  8. **2014-15** — The Working Group held its 7<sup>th</sup> meeting at Gwangju (Korea) in 2014 where the following presentations were made: (1) ‘Drought Management Strategies in Water Stressed / Scarce Regions’, (2) ‘Iranian experience in coping with Water Scarcity and Drought’, (3) ‘Rainfall Harvesting and Management for Sustainable Agriculture in Water Stressed/Scarce Regions’, (4) ‘Drought situation in California’, and (5) ‘Design Guidelines for Flood Based-Farming Systems’. These presentations have been uploaded on the website of WG ([http://www.icid.org/wg\\_drought.html](http://www.icid.org/wg_drought.html)).
  9. The WG reviewed progress in respect its final output and requested for one year extension to complete its mandate, which was approved by IEC/PCTA. WG decided to complete final output by August 2015 for discussion and finalization during its next meeting in October 2015 at Montpellier (France). In view of completing its mandate, the WG was also preparing a ‘Scoping Document’ to focus on the management of ongoing (permanent) water scarcity, whether caused by natural events or human interventions. The WG recommended merit in setting up of a new WG focusing on management of ongoing (permanent) water scarcity, whether caused by natural events or human intervention, rather than on (temporary) drought, which was approved by IEC/PCTA.

