

Minutes of the Twenty-ninth Meeting of the
WORKING GROUP ON DRAINAGE (WG-DRG)
 Tehran, Iran
 16 October 2011: 09.00-12.30 hours
Strategy Theme: Systems

Year of Establishment: 1983

Completion of the Mandate: 2013

Mandate:

- To promote drainage as part of integrated water resources management; and
- To promote sustainable approaches for drainage and related projects through a balanced integration of (1) environmental, (2) economic, and (3) social and cultural aspects.

Members Present: (1) Mr. B. Vincent, Secretary (France, 2007); (2) VPH Dr. M.H. Amer (Egypt, 1988); (3) PH Ir. Keizrul bin Abdullah (Malaysia, 1994) represented by Loh Kim Mon; (4) Dr. Chung Sang-Ok (Korea, 1996); (5) Mr. Chen, Hung-Kwai (Chinese Taipei, 1997) represented by Jan Ming-Young; (6) Mr. Rauno Peltomaa (Finland, 2002) represented by Jaakko Sierla; (7) Mr. AT van Coller (South Africa, 2006) represented by Dr. Gerhard Backeberg; (8) VP Dr. Shinsuke Ota (Japan, 2006); (9) Dr. Yurii Yanko (Russia, 2006); (10) Mr. Mati Tonismae (Estonia, 2010).

Apology: VPH Prof. Dr. B. Maticic (Slovenia)

Permanent Observers: PH Prof. dr. Bart Schultz (Netherlands).

Members Honoraire Present: (1) Mr. Felix Reinders, Vice President Hon., ICID (South Africa); (2) Prof. Peter Kovalenko, Vice President Hon., ICID (Ukraine); (3) Dr. Hussein El-Atfy, Vice President Hon., ICID (Egypt); (4) Dr. Samia El-Guindy, Vice President, ICID (Egypt).

Observers: (1) Ms. Zhaleh Vaziri (Iran); (2) Ramzaan Yucel (Turkey); (3) Mr. Ahmed Seren (Turkey); (4) Dr. Momon Sodik Imanudin (Indonesia); (5) Walled K. Shallash; (6) Thajer D. Abbas; (7) Khalid Aassim Othoman; (8) Jin-Yong Choi (Korea); (9) Dr. (Mrs). Irina Bondarik (Russia); (10) Mojtaba Akram (Iran); (11) Mr. Mohd Amin Mohd Soom (Malaysia); (12) Takanori Nagano (Japan); (13) Budi Wignyosukarto (Indonesia); (14) Chan Chee Sheng (Malaysia); (15) Mr. Kundius Vladimir (Russia); (16) Kundius Valentina (Russia); (17) Abdul Ridha Mistah (Iraq); (18) Mr. Basil Irhayyim (Iraq); (19) Mr. Kadhim Chaloob (Iraq); (20) Om-Math Verta (Finland); (21) Sun Ju An (Korea); (22) Jano Anter; (23) SH Park (Korea); (24) Kim Hyun-Tai (Korea).

Website: <<http://wg-drg.icidonline.org>>

Time schedule of the meeting:

Chairman W.F. Vlotman could not be present at the meeting due to his late arrival at Tehran because of delayed flight. The Secretary of the group Mr. Bernard Vincent therefore acted as Chairman for the Tehran meeting. He was assisted by Ms Honeyeh Kazemy from IRNCID who volunteered as the Secretary for the meeting.

At the outset, the time allocation for discussing of the Group's agenda was proposed as follows:

A. General business	30 minutes
B. Work plan	90 minutes
Tea/ coffee break	30 minutes
C. Presentations/ Workshop / Summary	60 minutes

A. GENERAL BUSINESS

Item 1 : Confirmation of the minutes of the 28th meeting of the Working Group

The minutes of the 28th meeting of the Working Group held at Yogyakarta in October 2010 were confirmed.

Item 2 : To review the membership of the Working Group

The Iranian National Committee (IRNCID) nominated Mr. Ardavan Azari in place of Dr. M. Bybordi for the membership of the Working Group. CV of Mr. Ardavan Azari was tabled at the meeting. The group considered and accepted the replacement for the membership.

The Finnish National Committee (FINCID) nominated Ms Helena Aijo in place of Mr. Rauno Peltomaa. Ms Aijo was not present but was represented by Mr. Jaakko Sierla who confirmed interest of Ms Aijo to become member. Emeritus Chairman Prof B. Schultz brought to the notice that attendance is not a condition to reject the candidature for the membership. So the group considered and accepted Ms. Aijo as the replacement for membership.

The Malaysian National Committee (MANCID) nominated Dr. Loh Kim Mon in place of PH Keizrul Bin Abdullah. The Indonesian National Committee (INACID) nominated Dr. Momon Sodik Imanudin as new member. Since the nomination applications were not available, Central Office was requested to check the with the respective national committees.

B. WORK PLAN

Item 3 : Activities of the Working Group

3.1 Technologies for reducing polluted drainage water and quality improvement

M. Akram, Chairman, WG on Drainage and Environment (IRNCID) made two presentations at the meeting viz. (i) Drainage in Iran – a country paper; and (ii) Disposal problems of drainage water in southern Iran.

3.2 Updating database on 'Drained area in the world'

At Yogyakarta, the group discussed about the updating database on 'drained area in the world'. The group also proposed that the data requires validation from the respective National Committee.

Subsequently, the Central Office circulated the datasheet "World drained area" to all National Committees and requested them to confirm the data/ amend and provide the updated data pertaining to their country by inserting correction in the table itself. In response, the Central Office received responses from the National Committees of Brazil, Czech Rep., France, Japan, Jordan, and Pakistan. The updated datasheet is given as **Annex 1**. The difficulty to get data related to drainage is highlighted under item 5.

Item 4 : Workshops/ Special Sessions sponsored by the Working Group

4.1 11th and 12th International Drainage Workshops (IDW)

The 11th International Drainage Workshop (IDW) will be hosted by the Egyptian National Committee (ENCID) in Cairo from 23-27 September 2012. The main theme of the 11th IDW is "*Agricultural Drainage Needs and Future Priorities*" under which six topics and 27 subtopics will be addressed. The first Announcement & Call for Papers of the 11th IDW has been issued and widely circulated amongst ICID National Committees and International Organizations for further dissemination amongst potential participants. The second announcement circulated during the Tehran meeting. All members were requested to widely broadcast amongst interested professionals outside the ICID network. The last date for receipt of abstracts of paper(s) at the workshop secretariat was **01 December 2011**. The workshop website <<http://www.encid.org.eg/idw11>> provides more details on topic/sub-topics, call for papers, venue, exhibition, study tours, etc. A draft listing of topics and sub-topics is shown as **Annex 2**, and on which there had been some comments, mainly linked to the lack of fashioned keywords that may be attractive to European authors (water quality, mitigation).

VPH Prof. Dr. M.H. Amer, Chairman, ENCID invited the international drainage community to join ENCID at this exciting event presenting the challenges, needs and solutions while assuring an enjoyable stay in Egypt.

RUCID representative made a brief presentation about the proposed theme, topics and subtopics and other preliminary preparations for the 12th IDW planned to be held in Russia in 2014.

It was also decided that ASABE will be approached to examine possibility for a common event at one of these dates. Mr. Vincent was to explore the possibility of common event at one of the two events viz. 11th or 12th IDW. The "North Africa spring events" have postponed many things and there appears to be lack of time to organise a joint event. Also the issue was not evoked during the meeting.

4.2 Annual Internal Workshop of the Group

The Group has been organizing internal workshops on the sidelines of its annual meetings in which members voluntarily make presentations on the topic of their countries' interest.

The Iranian National Committee made a presentation on drainage (please see section C).

Item 5 : Contribution to the website DRAINLINE/ LinkedIn Agricultural Drainage Group

The website of the Working Group on Drainage (WG-DRG) 'DRAINLINE' is fully functional and all members are encouraged to access it <http://www.wg-drg.icidonline.org>.

Chairman VP Dr. Vlotman launched an 'Agricultural Drainage Group' via the LinkedIn and invited all members to register and join it. The LinkedIn Agricultural Drainage Group is a professional network and is open for discussion to all persons. Dr. S.A. Kulkarni, Executive Secretary, Central Office posted the 'World drained area' data table inviting all the members of the 'LinkedIn' to check/ provide the drained area of their country. However there was no response. This shows the non-availability and complexity in reporting the drained area. The WG discussed ways and means to proceed further as follows:

Considering that the first version of the database has been developed on the basis of an appointed student work who could contact directly the right persons, it has been decided of a similar approach based on the voluntary work of members (See Table). Volunteers would be made in-charge of a region and will address the right contact persons of the neighboring countries so as to obtain a response, positive or negative. The task is to know if the collected data are valid and to return a positive response if yes, or obtain the correct value if not.

Table: List of volunteers and geographical zones

Jakko Sierla/Helena Aijo	Scandinavian countries
Mati Tonismae	Baltic counties
Irena Bondarik/Yurii Yanko	Russia
Bernard Vincent	South Europe and East Europe ; Maghreb
Victor Dukhovny	NIS
Ardavan Azari	Middle East
Loh Kim Mon	Asia
Gerhard Backeberg / AT van Coller	South Africa and neighbors as north as they can do
James Ayars (not present)	North America (and towards south as far as he can do)

The group is well aware that the whole world is not covered, especially in central and south America. The methodology will be tested by the volunteers and further development will be carried out depending upon the results obtained.

Item 6 : Compilation of experiences in bio-drainage and bio-saline agriculture

The group at its Yogyakarta meeting discussed and debated about the presentations made by Indian National Committee (INCID) on 'Bio-drainage' at the New Delhi meeting in December 2009. It was suggested to invite observations/ comments on the topic of bio-drainage amongst the group members and proposed that INCID

representative will take the lead in this activity. During the Yogyakarta meeting, it was also proposed that INCID prepare a detailed plan of action and circulate it amongst WG-DRG members for their comments.

Central Office has been following up with the INCID to get their feedback.

Considering the importance of this non-conventional modality of drainage in Middle East and Asia, it has been decided to keep this compilation as an important activity of the WG.

C. PRESENTATIONS/WORKSHOP/SUMMARY

Item 7 : Presentations from members/ member countries

Traditionally the host country makes presentation on some special aspects related to drainage. This year, the Chairman requested IRNCID to make such a presentation.

Dr. Mojtaba Akram (IRNCID) made a presentation entitled 'Disposal problems of drainage water in southern Iran'. The presentation dealt with research, technical concerns and had appreciable environmental issues like wetland protection and nitrogen loss control. Presentation created a lot of interest among audience. There were many questions from the floor to which Speaker responded satisfactorily. President Hon. B. Schultz, Chief Editor of 'Irrigation and Drainage' Journal, recommended the paper for publication in the Journal.

Item 8 : General discussion and summary of the meeting

The Pakistan National Committee (PANCID) forwarded the progress report of 'PANCID sub-committee on Drainage' compiled by Dr. Muhammad Mahboob Alam, Director General, IWASRI.

The Secretary summarized the key highlights of the meeting and urged all to attend 11th IDW at Cairo. The meeting was closed at 12.30 hours.

WORKING GROUP ON DRAINAGE (WG-DRG)**World Drained Area – Regionwise**

Sl. No.	Country	Arable land and permanent crops (million ha)	Total drained area (million ha)	% drained area	Reference year
AFRICA					
1	Algeria	8.42	0.06	0.71	1999 ²
2	Egypt*	3.54	3.02	85.31	1998 ²
3	Ethiopia	14.51	0.03	0.21	1987 ²
4	Kenya	5.8	0.03	0.52	2003 ²
5	Libya	2.05	0.01	0.49	2000 ²
6	Madagascar	3.55	0.11	3.10	2000 ²
7	Morocco	8.98	0.65	7.24	2004 ²
8	Rwanda	1.57	0.09	5.73	2000 ²
9	South Africa	19.28	0.08	0.41	2007 ¹
10	Sudan	20.91	0.56	2.68	2000 ²
11	Tunisia	5.04	0.2	3.97	2000 ²
	Sub-Total	93.65	4.84	5.17	
AMERICAS					
12	Argentina	33.0	0.13	0.40	2002 ²
13	Bolivia	3.82	0.02	0.52	2000 ²
14	Brazil	66.9	1.08	1.61	2006 ¹
15	Canada	67.5	9.46	14.01	2002 ²
16	Chile	0.78	0.035	4.49	2006 ¹
17	Colombia	3.46	0.23	6.65	1989 ²
18	Costa Rica	0.5	0.04	8.00	1999 ²
19	Cuba	3.97	0.33	8.31	1997 ²
20	Dominican Rep.	1.30	0.03	2.31	2000 ²
21	Ecuador	2.50	0.05	2.0	1998 ²
22	El Salvador	0.92	0.01	1.09	1997 ²
23	Guyana	0.45	0.15	33.33	1991 ²
24	Honduras	1.43	0.06	4.20	1991 ²
25	Mexico	27.50	5.2	18.91	1997 ²
26	Paraguay	4.3	0.01	0.23	2000 ²
27	Peru	4.44	0.08	1.80	2000 ²
28	Puerto Rico	0.1	0.02	20.00	2000 ²
29	Surinam	0.06	0.05	83.33	1998 ²
30	USA	173.2	47.5	27.42	1987 ²
31	Venezuela	3.35	0.31	9.25	2002 ²
	Sub-Total	399.48	64.80	16.22	

Sl. No.	Country	Arable land and permanent crops (million ha)	Total drained area (million ha)	% drained area	Reference year
ASIA					
32	Afghanistan	7.91	0.01	0.13	2000 ²
33	Australia	44.37	2.17	4.89	2002 ²
34	Azerbaijan	2.09	0.6	28.71	1995 ²
35	Bangladesh	8.70	1.5	17.24	1993 ²
36	China	130.03	21.14	16.26	2008 ¹
37	Chinese Taipei	0.83	0.12	14.46	2009 ¹
38	Fiji Island	0.25	0.01	4.00	2000 ²
39	Georgia	0.58	0.16	27.59	1996 ²
40	India	169.32	5.8	3.43	1991 ²
41	Indonesia	37.10	3.35	9.03	1990 ²
42	Iran	18.55	0.19	1.02	2009 ¹
43	Iraq	5.45	1.54	28.26	2002 ²
44	Israel	0.38	0.1	26.32	1987 ²
45	Japan	4.59	3.52	76.69	2010 ¹
46	Jordan	0.15	0.01	6.67	2008 ³
47	Kazakhstan	22.8	0.43	1.89	1993 ²
48	Korea Rep.	1.82	1.15	63.19	2007 ¹
49	Kyrgyzstan	1.35	0.15	11.11	1990 ²
50	Lebanon	0.29	0.01	3.45	2001 ²
51	Malaysia	9.5	6.0	63.16	2009 ¹
52	Mongolia	0.85	1.5	176.47	2000 ²
53	Myanmar	11.70	0.19	1.62	1994 ²
54	Nepal	2.47	0.09	3.64	2000 ²
55	Pakistan	23.80	7.54	31.70	2009 ¹
56	Philippines	9.16	2.72	29.69	2008 ¹
57	Saudi Arabia	3.68	0.04	1.09	1992 ²
58	Sri Lanka	2.20	0.03	1.36	1967 ²
59	Syria	5.68	0.27	4.75	1993 ²
60	Tajikistan	0.87	0.33	37.93	1994 ²
61	Thailand	18.85	0.16	0.85	1997 ²
62	Turkey	26.01	3.04	11.69	2009 ¹
63	Turkmenistan	1.92	1.02	53.13	1995 ²
64	Uzbekistan	4.62	2.84	61.47	1994 ²
65	Viet Nam	9.42	1.0	10.62	1994 ²
66	Yemen	1.61	1.5	93.17	2000 ²
	Sub-Total	588.90	70.23	11.93	

Sl. No.	Country	Arable land and permanent crops (million ha)	Total drained area (million ha)	% drained area	Reference year
EUROPE					
67	Albania	0.7	0.28	40.00	1999 ²
68	Austria	1.44	0.2	13.89	1997 ²
69	Belarus	5.64	3.0	53.19	1993 ²
70	Belgium	0.87	0.07	8.05	1996 ²
71	Bulgaria	3.25	0.08	2.46	2000 ²
72	Croatia	0.95	0.76	80.00	1990 ²
73	Cyprus	0.11	0.02	18.18	2000 ²
74	Czech Rep.	3.26	1.07	32.82	2011 ¹
75	Denmark	2.41	1.44	59.75	1993 ²
76	Estonia	1.32	1.32	100.00	2010 ¹
77	Finland	2.26	2.5	110.62	2008 ¹
78	France	19.33	3.00	15.52	2011 ¹
79	Germany	12.13	4.9	40.40	1993 ²
80	Greece	3.23	0.52	16.10	2002 ²
81	Hungary	4.8	2.3	47.92	2003 ¹
82	Ireland⁴	1.06	0.254	23.96	2010 ¹
83	Italy	13.2	5.3	40.15	2005 ¹
84	Latvia	1.18	1.58	133.90	1995 ²
85	Lithuania⁵	2.68	2.58	96.27	2011 ¹
86	Netherlands⁶	1.09	3.0	275.23	2010 ¹
87	Poland	12.97	4.21	32.46	1999 ²
88	Portugal	1.64	0.04	2.44	2002 ²
89	Romania	9.85	1.83	18.58	2008 ¹
90	Russia	192.6	4.78	2.48	2007 ¹
91	Serbia & Montenegro	3.72	0.4	10.75	2000 ²
92	Slovak Republic	1.41	0.6	42.55	1997 ²
93	Slovenia	0.2	0.08	40.00	2007 ¹
94	Spain	26.30	0.3	1.14	1994 ²
95	Sweden	2.64	1.1	41.67	1996 ²
96	Switzerland	0.43	0.16	37.21	2002 ²
97	UK	6.05	4.65	76.86	1996 ²
98	Ukraine	33.5	2.8	8.36	2009 ¹
	Sub-Total	372.22	55.12	14.81	

Summary				
Sl. No.	Region	Arable land and permanent crops (million ha)	Total drained area (million ha)	% drained area
1	Africa	93.65	4.84	5.17
2	Americas	399.48	64.80	16.22
3	Asia	588.90	70.23	11.93
4	Europe	372.22	55.12	14.81
	Total (98 countries)	1454.25	194.99	13.41
	World	1526.76	202.9	13.29

*Countries shown in bold are active members of ICID

Notes:

- 1 ICID data (both for arable land and permanent crop (APC) and for drained areas)
- 2 Cemagref data (for drained area)
- 3 FAO data, 2008 (the APC area of other countries is used from <http://faostat.fao.org/site/377/DesktopDefault.aspx?PageID=377#ancor>)
- 4 The total drained area in Ireland is 0.254 million ha, the total utilised agricultural area is 4.02 million ha. Apart from a very small area of Ireland that is irrigated on a commercial basis for crop production there are no major irrigation schemes in Ireland. Suggested figure for irrigated area in Ireland is 10,000 hectares. Source: Dr. Oliver Nicholson, Chairman, Irish National Committee on Irrigation and Drainage (IRCID), 28 June 2010
- 5 Statistics referred as "arable land" in Lithuanian registry as per 01.01.2010. The drained area slightly decreased as some of the area excluded from registry since that area has been completely depreciated and drainage no more functioning. Source: Prof.dr. Antanas Maziliauskas, President of Lithuanian National Committee (LICID), 26 June 2010.
- 6 The fact that the drained area is more than the APC area is a matter of definition. In the Netherlands' case the drained area includes areas with other functions such as drainage of meadows and urban areas. Source: Dr. Pol (A.L.) Hakstege, Secretary/ Treasurer, Netherlands National Committee (NETHCID), 2 July 2010.

**WORKING GROUP ON DRAINAGE (WG-DRG)
11th ICID International Drainage Workshop
23-27 September 2012, Cairo, Egypt**

Theme: Agricultural Drainage Needs and Future Priorities

Topics / Subtopics

1. Planning and Design of Drainage Systems

- 1.1 Integrated planning approach in agricultural drainage
- 1.2 Improved design theories for drainage systems
- 1.3 Subsurface drainage design (applied models)
- 1.4 Development of subsurface drainage design software for large-scale installation
- 1.5 Use of GIS and remote sensing in planning and designing of drainage systems
- 1.6 Non-conventional drainage systems design (biological drainage, controlled drainage, closed basins).

2. Improvement of Drainage Technology and Techniques

- 2.1 Modernization of auxiliary structures (manholes, flushing columns, outlet structures)
- 2.2 Modernization and automation of drainage systems construction
- 2.3 Adaptation of new technologies in the field of drainage investigations and installation
- 2.4 Drain envelopes materials (needs, selection, design, manufacturing and construction)
- 2.5 Practical experience with non-conventional drainage systems (trenchless, biological, controlled drainage systems)
- 2.6 New technology for maintenance of drainage systems (pipe drains, open drains).

3 Drainage Management

- 3.1 Drainage flood management in rainfed areas
- 3.2 Drainage within the concept of integrated water resources management
- 3.3 Institutional aspects of drainage schemes implementation
- 3.4 Public-private partnership in drainage development and management
- 3.5 Sustainable development and modernization of land drainage management.

4 Environmental Aspects and Climatic Change

- 4.1 Impact of climatic change on drainage systems
- 4.2 Climatic change impacts on soil and water quality
- 4.3 Quantity of drainage water
- 4.4 Sea water level rise impact on deltaic areas
- 4.5 Monitoring and evaluation of climate change impact on agricultural drainage.

5. Research Development and Capacity Building

- 5.1 Innovations, technologies and best practices for increasing crops, land productivity and water saving
 - 5.2 Capacity development for modern drainage management
 - 5.3 Research agenda for future land drainage management
 - 5.4 Lessons learned from drainage projects (case studies) towards capacity building
 - 5.5 Capacity development and training for on-farm drainage
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