

**Preparatory Meeting for the  
AMERICAN REGIONAL WORKING GROUP (AMRWG)**

12 October 2017, 09:00-10.30 hours (Session-I)  
12 October 2017, 11:00-12.30 hours (Session-II)  
Mexico City, Mexico

**Presented by the Chairman**

**Summary of the Proceedings of the Meeting:**

1. Vice President Hon. Laurie C. Tollefson (Canada), who graciously agreed to Chair the meeting, welcomed the representatives from Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Mexico and Peru and invited Secretary General Er. Avinash C. Tyagi to present the pretext for the meeting and background of ICID. SG Avinash Tyagi prepared his slide presentation in Spanish and his remarks were also translated in Spanish for better understanding. SG Avinash Tyagi informed that the 'Latin American Working Group' (LARWG) was first established in 1999 with seven countries (Argentina, Brazil, Chile, Colombia, Guyana, Honduras and Mexico) as its members. Several events including the 4<sup>th</sup> Inter-Regional Conference were organized during the period. The group was renamed as 'American Regional Working Group' (AMRWG) Group in 2003 to attract wider participation. However, it was disbanded in 2012 due to lack of interest in spite of best efforts from VPH Lucio Ubertini (Italy), Mr. Maurice Roos (USA), Dr. Clark Ballard (Australia) and VPH Laurie Tollefson (Canada) and several other National Committees. SG Avinash Tyagi explained the benefits of joining ICID briefly to the participants.

2. It was also generally felt that language is a big issue and needs to be considered if Latin American countries are to actively participate in ICID. It was also explained that the Latin American countries could become a country member, an institutional member or an individual member.

3. To initiate discussion, SG Avinash Tyagi raised questions: (1) How do we find opportunities to work together (2) Did an irrigation network exist in Central and South America. The Latin American representatives informed that such a network didn't exist but they would like to start one. The feeling was that ICID would be useful in Latin America and that Mexico should take lead and work with ICID Central Office on the subject.

4. VPH Tollefson informed that while President Hon. Chandra A. Madramootoo (Canada) was dynamic in establishing the LARWG in early years, he had recently been to Brazil and had talks with Embrapa. He felt that it would be difficult to go through the governments these days and therefore would need to find a way through the private sector.

5. The participants then discussed joining ICID and proposed the following possible steps to be taken: (a) Have MXCID in cooperation with ICID Central Office correspond with all Latin American countries particularly with Ministers of Agriculture / Ministers of Water Resources inviting them to join ICID?; and (b) Have a '*Regional Special Session*' for Latin American countries at Saskatoon, Canada where the participating countries could interact and discuss more about working together and explore ways to join ICID? (c) Consider establishing a Spanish speaking node in Mexico on the same line as Int. Research Program for Irrigation and Drainage (IRPID) in China and Iran for transfer technology.

6. It was proposed to develop the theme for the '*Regional Special Session*' around climate change, water management and competing demands for water, in cooperation with Mexican National Committee (MXCID). MXCID can then send special invitations to Latin American countries for attending the '*Regional Special Session*' at Saskatoon.

7. VPH Tollefson further informed that prior to the AMRWG meeting, Latin American Meeting on Irrigation and Drainage was held on 11 October 2017 at Mexico. Ing. Marco Antonio Parra Cota (CONAGUA, Mexico) and Dr. Nahún H. García Villanueva (IMTA, Mexico) Chaired and Co-chaired the meeting, respectively, whereas ICID Young Professional Dr. Carlos Sánchez (Ecuador) acted as a Rapporteur where a group of experts from 7 Latin countries participated.

8. The Latin American meeting was held in two sessions. In Session I, five presentations were made as below:

- (a) Background and use of water in agriculture.
- (b) Organization, administration and management of water for irrigation.
- (c) Evolution and development of irrigation and drainage.

- (d) Problems, challenges and opportunities for the hydro-agricultural sector.
- (e) Possible lines and forms of cooperation with Latin American countries.

In Session II, a workshop was held focusing on following two issues:

- (a) Key challenges in the Latin American and Caribbean region and options for their solution.
- (b) Possible forms of cooperation between the countries of Latin America and the Caribbean.

9. Latin American Meeting focused on review of current and future state of water use in agriculture; the form of organization, administration and management of the water resources used for food production; development of irrigation and drainage; as well as the issues, challenges, needs and possible forms of cooperation and collaboration within the hydro-agriculture sector between Latin American and Caribbean countries. The consensus was achieved on strategic actions that need to be promoted in order to achieve water security and the sustainable development of the region's hydro-agriculture sector is given in **Annex**.

10. It was generally noted that the problems related to water management in agriculture in Latin America are very similar, varying in size and degree, and therefore it was proposed to establish a Task Team (TT) to look into the issues emerging from the 'Declaration', including the formation of Regional Association for ICID membership.



**Annex [Appendix V, Para 9]**

**LATIN AMERICAN MEETING ON IRRIGATION AND DRAINAGE  
11 and 13 October 2017, Mexico City, Mexico**

**Summary of the Proceedings of the Meeting (draft)**

The Latin American Meeting on Irrigation and Drainage was held on 11 and 13 October 2017 during ICID's 23rd International Congress Irrigation and Drainage organized by the International Commission on Irrigation and Drainage (ICID) in cooperation with the Mexican National Committee of ICID (MXCID), sponsored by the Commission Nacional del Agua (CONAGUA) and technical support from the Mexican Institute of Water Technology (IMTA) during 8-14 October 2017 at Mexico City, Mexico where a group of experts from 7 countries (Argentina, Bolivia, Chile, Costa Rica, Mexico, Peru and Dominican Republic) participated.

Through this meeting, a review and analysis exercise was carried out on the current and future state of water use in agriculture; the form of organization, administration and management of the water resource used for food production; development of irrigation and drainage; as well as on the issues, challenges, needs and possible forms of cooperation and collaboration within the hydro-agriculture sector between Latin American and Caribbean countries.

The proceedings of the meeting were held in two Sessions. Session I consisted of five presentations as listed below:

- (1) Background and use of water in agriculture.
- (2) Organization, administration and management of water for irrigation.
- (3) Evolution and development of irrigation and drainage.
- (4) Problems, challenges and opportunities for the hydro-agricultural sector.
- (5) Possible lines and forms of cooperation with Latin American countries.

In Session II, a workshop was held around the following two topics:

- (1) Key challenges in the Latin American and Caribbean region, and options for their solution.
- (2) Possible forms of cooperation between the countries of Latin America and the Caribbean.

In order to carry out the analysis in this workshop, some of the international commitments already made in the region were considered. In particular, it was considered that significant reduction of hunger and malnutrition at the international level was achieved by 2014-2015 as part of the Millennium Development Goals (MDG) target 1C thereby reducing undernourishment by half. And looking to the future, the international community ratified Agenda 2030 and the Sustainable Development Goals (SDGs) with the commitment to permanently eradicate hunger and malnutrition by 2030.

In view of these commitments and its linkages with the hydro-agriculture sector in the region, the following five Sustainable Development Goals/objectives for 2030 were developed:

- (a) Goal 1: End poverty in all its forms around the world
- (b) Goal 2: End hunger, achieve food security and improve nutrition, and promote sustainable agriculture
- (c) Goal 6: Ensure water availability and sustainable management and sanitation for all
- (d) Objective 12: Ensure sustainable consumption and production patterns
- (e) Objective 13: Take action to combat climate change and its effects

In this respect, it was stressed to realize the importance of these goals and objectives and commit ourselves to eradicate hunger in the Communities of Latin American and Caribbean States by 2025, five years earlier than agreed in the Agenda 2030. It was recognized that it will be challenging to provide physical and economic access to sufficient, safe and nutritious food at all times to satisfy the dietary needs and preferences to all people at the individual, household, national and global level.

At the same time, it was also recognized that in order to achieve sustainability within the hydro-agriculture sector, it will be essential to provide simultaneous access to food and water security by establishing at least the following three basic necessities:

- (a) Adequate water availability of water (in quantity and quality) for food production without entering into conflicts with water for domestic use and water for ecosystems.
- (b) Develop capacities to access and harness available water sustainably and manage the balance between sectors.
- (c) Establish a mechanism to manage risks associated with various uses of water and its impact on the economy of the hydro-agricultural sector.

Thus, when working on the description of the mechanisms, that participants believe to be necessary for simultaneously achieving the food and water security, the following identified set of shared challenges and constraints needs to be considered:

- (a) Demographic growth
- (b) Socio-economic development
- (c) Economic globalization
- (d) Public policies
- (e) Externalities and opportunities between productive sectors
- (f) Increase in profits - Integrated management of water, soil and energy resources
- (g) Climate Change
- (h) Extreme Events
- (i) Control of negative impacts
- (j) Development of irrigated agriculture
- (k) Rural and urban development in harmony

As a result of discussions held, a consensus was reached and four physical spaces or thematic fields, within the productive areas, were identified where it is necessary to act:

- (1) Collection areas and sources of supply,
- (2) Networks and systems of conduction, distribution and delivery,
- (3) Production systems - irrigated lands, and
- (4) Drainage systems and pollution control.

In order to move forward, the following actions have been identified and prioritized:

- (a) Thematic area - Rational specific actions
- (b) Reduce the area under irrigation where over-exploitation of surface and ground water exists, controlling the over extractions and improving the conveyance, distribution and irrigation efficiencies.
- (c) Extraction from overexploited aquifers must be controlled without affecting, as far as possible, the users.
- (d) Supervise extractions through direct and indirect volumetric measurements and encourage to respect for rules for extractions (legal control).
- (e) Improve the efficiency of pumping equipment and reduce energy costs.
- (f) Improve conduction, distribution and application efficiencies to reduce water losses in irrigated areas.
- (g) Establish energy tariffs with bonds linked to productivity ranges.
- (h) Respect and update the optimal extraction policies in dams, prioritizing their management in droughts and scarcity conditions.
- (i) Develop policies and production schemes to control the extraction in 15 overexploited aquifers.
- (j) Increase in areas of irrigation and drainage where guaranteed water supply is available.
- (k) Develop and innovate systems of irrigation and drainage according to the physical and climatic conditions of the irrigation zones of the country.
- (l) Conduct prefeasibility and feasibility studies to transform agricultural areas to irrigated areas.
- (m) Introduce new technologies to improve gravity irrigation, such as intermittent irrigation, as well as controlled drainage.

- (n) Promote controlled drainage in wetlands to significantly increase the production.
- (o) Analyze the annual recharge of aquifers, recharge aquifers where recharge capacity is high, provide pressurized irrigation in humid areas with low irrigation demand and develop these productive systems for high value crops.

Networks and systems of conduction, distribution and delivery: Describe the existing infrastructure, determine its status and estimate performance and investment requirements that translate into tangible benefits, so that the cost benefit ratio is greater than unity. Most of the districts and irrigation units have infrastructure with more than 50 years of history. Large-scale interventions are needed to extend its useful life and increase its capacity for increased hydro-agricultural productivity.

Volumetrically measuring water at the inter-land and parcel level: Process and transmit data in real time to centers for monitoring and control of allotments and concessions. To evaluate the water productivity, it is essential to measure the volumes that are extracted from the sources of supply, taken to the irrigated areas and distributed and delivered at the inter-land and parcel level.

Production systems and parcel irrigation: Promote agriculture like business - supporting and integrating producers in production systems of more than 1,000 ha. The international experience shows that collective irrigation and its integrated management in areas of more than 1,000 ha allows to optimize inputs, machinery and equipment associated with agricultural production in addition to reducing labor costs, among other benefits that result in greater agricultural profitability. The following issues may be considered when promoting agriculture like a business:

- (1) Promote the development of collective networks on demand.
- (2) Develop irrigation systems that optimize production per unit area, both in quantity and quality, to compete in the international market.
- (3) Promote agriculture like business, focusing on greater profitability.
- (4) Develop pressurized irrigation systems especially in areas with recurrent droughts and reduction in water availability due to climate change. The drip irrigation may be practiced allowing irrigation efficiencies to reach up to 85% and consequently reducing the pressure on the water resources in general and increasing the water productivity.
- (5) Promote irrigation technologies in areas with water shortages and recurrent droughts as a viable option for sustainable agriculture.
- (6) Develop innovative equipment, materials and control systems to reduce costs and simplify operations including fertigation.
- (7) Promote consumption of the agricultural produce in the same area - Self-consumption of agriculture produce with crop diversification, for a balanced diet, is fundamental as human rights to food thereby contributing to food security.
- (8) Develop modular family gardens with pressurized irrigation systems equipped with alternative source of energy (solar) and rainwater harvesting.
- (9) Transforming storm zones into irrigation zones where possible - transformation from storm to irrigation lands results in 2 to 3 times increase in production.
- (10) Make designs to maximize the advantages of the storm - complemented with irrigation may result in double cropping resulting in higher cropping intensity and therefore productivity.

Systems of drainage and control of the pollution: The drainage is practiced to remove excess water and promote the hydro-agricultural development in the humid and sub-humid zones. There are millions of hectares of land in humid and sub-humid zones that can be brought under agricultural production with controlled drainage thereby significantly increasing the productivity for enhanced food security. The following issues may be considered when promoting agriculture in humid and sub-humid zones:

- (1) Improve and increase agricultural production in humid and sub-humid areas by introducing controlled land drainage. In case of coastal zones, desalination has the greatest potential for the development of irrigation zones in the coastal belts. There are aquifers with marine intrusion whose waters could be used for agricultural production.
- (2) Develop filtering techniques to optimize the use of the soil materials in combination with artificial processes (meshes, pressure etc.).

- (3) Investments in the humid and sub-humid zones should be determined based on guaranteed returns. To successfully reuse both drained agricultural water and treated waste in the region, no less than 500,000 ha are required. This experience opens up great expectations for the development of irrigated agricultural areas supplied with treated wastewater but at the same time poses environmental, social and economic problems and challenges.
- (4) Develop technology and normative criteria to promote the use of treated wastewater for agricultural production.
- (5) Promote the integrated design to use the treated wastewater and the irrigation water in a joint operation.

Having examined the various common challenges and problems and having identified public policies and points of convergence, consensus was achieved on strategic actions that need to be promoted in order to achieve water security and the sustainable development of the region's hydro-agriculture sector :

**A. "Options for the solutions to problems, challenges and opportunities for the sustainable development of the hydro-agricultural sector in Latin America and the Caribbean".**

- (1) Sources of supply
  - (a) Ensure the availability of the water resource
  - (b) Control the deterioration of water quality
  - (c) Conserve water bodies with compatible quality for agricultural production
  - (d) Controlling overexploitation of aquifers; and
  - (e) Regulate the interaction between surface and groundwater
- (2) Regulate the agricultural areas for irrigation depending on the water availability
  - (a) Evaluate the impact of technological developments and changes of use on water resources
  - (b) To control the processes of salinization associated with the development of irrigation
  - (c) To promote the efficient use of water and energy in productive processes
  - (d) Zoning of agricultural production in micro-watersheds; and
  - (e) Define the dimension and establish sustainable productive hydrographic areas
- (3) Management and conservation of watersheds
  - (a) Develop effective instruments of territorial organization and watershed management
  - (b) Control erosion levels in degraded watersheds and clogging of reservoirs
- (4) Risks and effects associated with extreme events and climate change
  - (a) Reduce the impact of floods, droughts and climate change
  - (b) Addressing the effects of climate change and agro-climatological variability on production
  - (c) Regulate change in runoff and drainage conditions in watersheds
  - (d) Incorporate into decision-making the uncertainty associated with extreme events and climate change.
- (5) Innovation, science and technology - Promote the development of products derived from innovation, science and technology for the sustainable development of the hydro-agriculture sector in the region.
- (6) Promote the generation of a shared vision in the legislation associated to the hydro-agriculture sector.

**B "Possible forms of cooperation for water security and sustainable development in the hydro-agricultural sector among Latin American and Caribbean countries".**

- (a) Adopt sustainable development, prioritizing food and water security, as a platform for action of the hydro-agriculture sector in the region.

- (b) To carry out an integration of all the international agreements related to the hydro-agricultural sector signed between the different countries of the region, including those linked with international institutions, to establish a monitoring mechanism that allows for their evaluation and where appropriate, bring in more stake holders.
- (c) To promote the formation of a Regional Association for the Sustainable Development of the Hydro-agricultural Sector in Latin America and the Caribbean. This association should include representatives from the public and private sectors of each country, as well as experts and researchers in the field.
- (d) Make a proposal to form a group of experts and decision makers, in cooperation with ICID, to develop a strategic plan for the Sustainable Development of the Hydro-agriculture Sector in Latin America and the Caribbean.
- (e) To request the group of experts to compile and integrate common information and statistics from of the hydro-agricultural sectors in the Latin America and the Caribbean on a common platform.
- (f) The group of experts from the Latin American and Caribbean Region can establish a Regional Association and join ICID as a single Regional member representing the region.
- (g) Member countries to develop a 'Vision Document – 2030' on the problems, challenges and opportunities in Latin American and the Caribbean region in consultation with ICID.
- (h) Analyze proposals to establish regional cooperation mechanisms to prevent and reduce the impact of climate change and extreme events in the hydro-agriculture sector of the region.

Taking into account the above, the panelists listed below appeal to the countries of the region to promote the establishment of joint action and communication mechanisms for food and water security and the sustainable development of the hydro-agriculture sector of Latin America and the Caribbean.

The following discussants were present on 13<sup>th</sup> October 2017 at Mexico City:

ING SERGIO LEANDRO MARINELLI  
Superintendence of the General Department of Irrigation  
Government of Mendoza, Argentina

ING. LUIS GROVER MARKA SARABIA  
Adviser to the Minister of Water Resources and Irrigation  
Ministry of Environment and Water, Plurinational State of Bolivia

DR. SAMUEL ORTEGA FARÍAS  
Center for Research and Transfer in Irrigation and Agroclimatology (CITRA)  
University of Talca, Chile

DRA. KAREN TATIANA MONTIEL LÓPEZ  
Coordinator of the Water and Soil Component  
Insignia Project for Resilience and Integral Management of Environmental Risks  
Inter-American Institute for Cooperation on Agriculture, Costa Rica

LIC. IUS FELIPE ALOCER ESPINOSA  
Secretario General  
Comité Nacional Mexicano del ICID (MXCID)

DR. NAHÚN HAMED GARCÍA VILLANUEVA  
Coordinator of Irrigation and Drainage of the Mexican Institute of Water Technology

DR. JESUS ABEL MEJÍA MARCACUZCO  
Coordinator of the Postgraduate Program in Water Resources  
National University Agraria La Molina, Peru

ING. OLGO FERNÁNDEZ RODRÍGUEZ  
Executive Director  
National Institute of Hydraulic Resources (INDRHI),  
Dominican Republic



