CALL FOR PAPERS

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INTERNATIONAL COMMISSION ON IRRIGATION AND DRAINAGE
20th International Congress on Irrigation and Drainage

13-18 October, 2008
Lahore, Pakistan

Theme:
Participatory Integrated Water Resources Management – From Concepts to Actions

CALL FOR PAPERS

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International Commission on Irrigation and Drainage (ICID) was established in 1950 as a Scientific, Technical, Non-commercial, Non-Governmental International Organization (NGO) with headquarters at New Delhi, India. The Commission is dedicated to enhancing the worldwide supply of food and fiber by improving water and land management, especially the productivity of irrigated and drained lands. The mission of ICID is to stimulate and promote the development and application of the arts, sciences and techniques of engineering, agriculture, economics, ecological and social sciences in managing water and land resources for irrigation, drainage and flood management using research and development, and capacity building. ICID aims to achieve sustainable irrigated agriculture through integrated water resources development and management (IWRDM). ICID network spreads to 105 countries all over the world.
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DATES TO REMEMBER

1. Submission of Summary and Conclusions 01 September 2007
2. Intimation of Acceptance 15 December 2007
3. Receipt of full text of accepted papers 01 March 2008
INVITATION

The International Commission on Irrigation and Drainage (ICID) is a scientific and technical non-governmental international professional organization dedicated inter alia, to improve water and land management to enhance the worldwide supply of water and fibre for all people.

ICID stimulates and promotes the development and application of arts, sciences and techniques of engineering, agriculture, economics, ecology and social science in managing water and land resources for irrigation, drainage and flood control and river training applications. It’s objectives encompass research and development, capacity building and adoption of comprehensive State-of-the-Art approaches and techniques for sustainable agriculture in the World. ICID, founded in 1950, enrolled as many as 105 member countries; about 60 of them are active and contribute to the goals and missions.

ICID Congresses concentrate on themes of global interest keeping in view their relevance for the profession. The events are held once in three years in any one of its member countries who volunteer to assist in this regard. The 20th Congress of ICID will be held in Lahore, Pakistan between 13-18 October 2008. The theme of the Lahore Congress is “Participatory Integrated Water Resources Management – From Concepts to Actions”.

A few words on ICID Congresses for new contributors would not be out of place. ICID Congresses aim to bring out impressive accomplishments of the recent past; the upcoming issues relevant to the theme chosen focusing especially on irrigation, drainage and flood management have been the core aim. Apart from the focus on research and recent developments, expectations stemming out of these to contribute to the growing demand of food and fibre for an ever increasing population are highlighted. The forthcoming Congress will help to recognize the multi-disciplinary and multi-functional roles required while providing an ideal platform in the implementation of Integrated Water Resources Development and Management (IWRDM).

The General Reporters and the Panel Experts for the Congress were considered and approved by the International Executive Council of ICID in Kuala Lumpur, Malaysia in September 2006. The scope of the Technical Sessions is given in detail in the booklet.

Responses to ICID Congress themes are usually substantial. Due to obvious constraints to present all of them, only a limited number of papers are selected for presentation at the Congress and their text published in a CD-ROM. Poster Sessions for the Congress Questions are arranged to give an opportunity to
more authors for presentations; this enables them to have a closer and intensive interaction with the international participants. Full-text of the accepted papers for the Poster Session will also find a place in the CD-ROM. The Congress transactions will contain all the keynote addresses, general reports and abstracts of all papers.

I trust that the setup of the 20th Congress, with the selected topics and their scope, will offer a splendid opportunity to all the leading professionals to bring out the new developments on the Congress theme. All potential authors are invited to contribute papers for the Congress, avail the opportunity to join the events and exchange ideas with experts, policy makers and donors, gathered during the events. As one of the countries with a rich historic tradition in irrigation, drainage and flood management, Pakistan has indeed a lot to offer.

I am sure that you would love to join us in Lahore in October 2008.

M. Gopalakrishnan
Secretary General, ICID
At the 53rd International Executive Council (IEC) Meeting held in Montreal, Canada, in 2002, the Pakistan National Committee on Irrigation and Drainage (PANCID) made a proposal to host the 20th Congress and 59th International Executive Council meeting. At the IEC meeting, the proposal was accepted and Pakistan was invited to host the 20th Congress and 59th IEC meeting in Lahore, Pakistan during 13-18 October, 2008.

Islamic Republic of Pakistan is located in the heart of Asia, having India, China, Afghanistan and Iran as its neighbours. Nature has blessed Pakistan with unique topography; the great mountain ranges of the Himalayas, Karakoram and Hindukush; alluvial plains with five major rivers joining the Indus River flowing into the Arabian Sea; Thar and Cholistan deserts, and a long coastal line. The massive glaciers and mighty rivers provide the natural resources of water which plays a very significant role in the economic development of the country. GDP growth is 6.6% as recorded in 2005-2006.

Pakistan is the cradle of one of the oldest civilizations; the Indus Valley. It is the 9th most populous country in the world with 150 million people. Agriculture is the backbone of economy, contributing 25% of GDP, 47% of total employment and more than 60% of foreign exchange earnings.

The Irrigation System of Pakistan is one of the largest integrated irrigation networks in the world. The Indus Basin Irrigation System commands an area of 42 million acres (17 million Ha). The Indus River and its western tributaries on an average bring about 142 million acre feet (MAF) of water annually and the average annual canal withdrawal is 104 MAF. The system has three major storage reservoirs, namely; Tarbela and Chashma on River Indus, and Mangla on River Jhelum, 19 barrages, 12 inter-link canals and 45 independent canal commands and 94 large dams. The total length of main canals alone is 64,000 km. Water courses comprise of another 1,621,000 kms.

Although enormous achievements have been obtained in the water sector in Pakistan, it must be noted that approaches in managing water resources poses a serious challenge. These challenges are similar in many other cases in the world in the 21st century. Therefore, the theme of ICID 20th Congress “Participatory Integrated Water Resources Management - From Concepts to Actions” provides us an opportunity to discuss these issues and share our experiences among scientists, engineers, experts and other professionals in Lahore during 20th Congress in 2008.
Lahore is one of the ancient cities of the sub-continent with a very rich cultural heritage. It is the social, cultural and educational hub of the country. This historical city is enriched with centuries old civilization and Mughal architecture, such as the Badshahi Mosque, Lahore Fort, Shalimar Gardens, Tomb of Jehangir, etc., which provide a glimpse of the glorious civilization of this land. The city has also a modern look with state-of-the-art developments. Its offers ancient to modern shopping experiences with its variety of markets. You will find antiques and latest designer products in these markets. Another major attraction for everyone, especially food lovers is the famous Food Street where different types of food varieties are available.

I take pride to invite all members of the ICID family to participate in ICID 20th Congress and 59th IEC meeting in October 2008. Pakistan welcomes all of you with its beautiful tourist’s sites, rich experiences in irrigation and drainage and a very warm and friendly hospitality. We will make every effort to assure all participants a successful Congress and a pleasant stay in Pakistan.

I look forward to seeing all of you in Lahore.

Engr. Dr. I.B. Shaikh  
Chairman of the Congress Preparatory Committee
INTERNATIONAL REVIEW COMMITTEE

GENERAL REPORTERS

QUESTION 54 : Sustainable Integrated Water Resources Management
   · Dr. Hussam E.S. Fahmy (Egypt)

QUESTION 55 : Role of Public and Private Sectors in Water Resources
   Development and Management
   · Prof. L.K. Oosthuizen (South Africa)

SPECIAL SESSION : Implication of Global Changes on Irrigation and Drainage
   System Development and Management
   · Prof. Dennis Wichelns (USA)

SYMPOSIUM : Integrated Water Management in the River Basin Context
   · Mr. Peter S Lee (UK)

SEMINAR : Lessons to Learn from the History of Water Management in
   Large River Basins and Drought
   · Prof. N. Hatcho (Japan)

PANEL EXPERTS (Under Expansion)
   • Dr. James E. Ayars (USA)
   • Engr. M. Mushtaq Chaudhry (Pakistan)
   • Prof. N. Hatcho (Japan)
   • Dr. Izhar ul Haq (Pakistan)
   • Mr. Jean Marcel Laferriere (Canada)
   • Engr. I.K. Musa (Nigeria)
   • Mr. Waseem Nazir (Pakistan)
   • Dr. Mark Svendsen (USA)
   • Dr. M.K. Siahi (Iran)
   • Mr. Laurie Tollefson (Canada)
   • Prof. T. Watanabe (Japan)
   • Dr. Gao Zhanyi (China)
   • Prof. Victor Dukhovny (Uzbekistan)
   • Ir. Jos van Alphen (The Netherlands)
   • Dr. Franklin E. Dimick (USA)
20th International Congress on Irrigation and Drainage

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SCOPES OF CONGRESS TOPICS

During the Congress, papers are presented and discussed for two Questions, a Special Session, a Symposium, and numerous Workshop. For the Questions, authors can submit papers through their National ICID Committees, or through the International Organizations active in the field of irrigation and drainage. For the Special Session, Symposium and Seminar, only one paper per country can be submitted. Details are given in this Call for Papers. The topics for the two Questions, Special Session, Symposium and Seminar are:

A. Congress Questions

- **Question 54** Sustainable Integrated Water Resources Management
- **Question 55** Role of Public and Private Sectors in Water Resources Development and Management

B. Special Session

- **Implication of Global Changes on Irrigation and Drainage System Development and Management**

C. Symposium

- **Integrated Water Management in the River Basin Context**

D. Seminar

- **Lessons to Learn from the History of Water Management in Large River Basins and Drought**

CONGRESS THEME: Participatory Integrated Water Resources Management – From Concepts to Actions

Integrated water resources management is an issue of very high significance as it involves national and global assets of great socio-cultural, ecological and economic values. The prevailing system of uncoordinated water resources management cannot sustain the ever-increasing water needs of the various expanding sectors, therefore, a strategy must be sought to integrate the various sectoral needs against the available water resources in order to attain both economic and ecological sustainability. Participatory approach with the stakeholders needs to be established on several key issues. Capacity building of stakeholders on water natural resources management policies, water rights and enforcement of laws would be an important input for a participatory
Call for Papers  

20th International Congress on Irrigation and Drainage

integrated water resources management where roles and responsibilities have to be ironed out.

A. CONGRESS QUESTIONS

QUESTION 54 : Sustainable Integrated Water Resources Management

Integrated planning and management provides the most rationale basis for optimal development of water resources. There are large temporal and spatial variations in the three main sources of water i.e. the surface water, precipitation and groundwater. Despite large potential for the development of all the three sources of water, there are some constraints in their optimal development. Specific character of integrating mechanism should be especially identified and highlighted. The policy framework for development of integrated water resources management structure should uniquely suit the nature of water resources, institutional setup, socio-economic conditions and cultural practices. Equitable and demand based water availability dictates that integrated management of water resources be carried out.

Water is a limited natural resource. Only about 3% of the world's total water resource is fresh (non saline) water, of which roughly one-third is inaccessible. The rest is unevenly distributed. In many areas, the existing water resources are increasingly contaminated with wastes and pollution from industrial, agricultural and domestic sources. Over the years, rising population, growing industrialization, and expanding agriculture have led to a rising demand for water. South Asia is one of the most densely populated regions of the world. It houses roughly one-fifth of the world’s population, and this share is likely to increase to one-fourth of the total world population by the year 2025. The economies of the countries in the region are heavily dependent on agriculture. There is a strong and growing need to ensure sustainable integrated water resources management for agriculture, domestic and industrial needs, as well as for preservation of the environment. Contributions are invited in this question under the following sub-topics.

54.1 Knowledge base, information management and dissemination of research in developing countries

River basins constitute highly complex interconnected ecosystem. When a dam or barrage is constructed, the water and sediment cycles are changed dramatically. When water is diverted onto deserts, the water and salt balances seek new equilibrium. In systems so massive and complex (e.g. Indus River basin) the generation and smart use of knowledge are the keys to adaptive management. High quality and consistent data is required for sound planning. There are many agencies and institutions collecting land
and water-related data in most of the developing countries. Various organizations carry out research on a vast range of topics, particularly on latest techniques and methodologies for optimal use of irrigation water as part of the conservation strategy for the integrated water resource management. However, the data that is collected is not generally consolidated by any one agency and is often not easily available when needed by planning and implementing agencies, project stakeholders and the public. There is need to improve knowledge base by developing a national planning database which will support an integrated information system in order to plan and develop the water resources on a sustainable basis. Such a system needs to be based on modern lines and efficient procedures for collection, processing, retrieval and dissemination.

54.2 Design and operation of irrigation systems for use of treated and partially treated wastewater, saline water or soils - Limitations and opportunities

There is a desperate shortage of fresh water. More water resources must be reserved for drinking each year while growing populations also boost the demand for agricultural products. In an effort to supply the needs of the populations for water, food and produce; gray water, run-off water and saline water resources are being used for farming. The quality natural water resources have generally been degraded by untreated/ partially treated municipal and industrial wastewater, rising watertable resulting in waterlogging and salinity, and inadequate disposal of drainage effluent. These are the major problems that have been infused into the irrigation system. For sustainability of the irrigated agriculture, it is imperative to design and operate the irrigation system based on use of treated and partially treated wastewater, saline water or soils. Considerable research has been carried out on this subject, which needs to be shared to provide opportunities to the affected land to become productive. This has spurred the search for new crops that tolerate saline, brackish and poor quality water. Attempts are being made to introduce salt tolerant, water saving crops which would require to design and operate the irrigation system in a more sustainable manner.

54.3 Conjunctive operation of storage reservoirs for multi-purposes

Demand for water is steadily increasing throughout the world with rapid growth in population. Freshwater resources are limited and unevenly distributed. Seasonal variations and climatic irregularities in flow impede the efficient use of river runoff, with flooding and drought causing problems of catastrophic proportions. Dams can make a significant contribution towards efficient management of water resources.
Multi-purpose storage reservoirs play a pivotal role in integrated water resources management by providing water for irrigation, domestic and industrial water supply, hydropower generation, flood control, recreation, inland navigation and fish farming.

54.4 Experiences on impacts of climate changes on water resources

There is uncertainty with respect to the prediction of climate change at the global level. Although the uncertainties increase greatly at the regional, national, and local levels, it is at the national level that the most important decisions would need to be made. Higher temperatures and decreased precipitation would lead to decreased water-supplies and increased water demands; they might cause deterioration in the quality of freshwater bodies, putting strains on the already fragile balance between supply and demand in many countries. Even where precipitation might increase, there is no guarantee that it would occur at the time of year when it could be used; in addition, there might be a likelihood of increased flooding. Any rise in sea level will often cause the intrusion of salt water into estuaries, small islands and coastal aquifers and the flooding of low-lying coastal areas; this puts low-lying countries at great risk. The most important impacts of climate change would be the effects on the hydrologic cycle and on water management systems and, through these, on socio-economic systems. Increase in incidence of extremes, such as floods and droughts, would cause increased frequency and severity of disasters. What seems likely is that climate change will increase the variability of already highly variable rainfall patterns, requiring greater investments in managing both scarcity and floods.

54.5 Mineral tolerant plants in waterlogged and saline lands

Waterlogging and salinity are rendering agricultural land useless all over the world at a very rapid pace. According to the projections of Food and Agriculture Organization of the United Nations (FAO), 25 per cent of the agriculture land in the world will be rendered useless due to salinity in the next 25 years; and by 2050, it is feared that 50 per cent of the land will turn saline. Since reclamation of land is a costly and time-consuming process, efforts are on to develop genetically-engineered crop varieties.

One of the methods is the bio-saline approach which offers better use of saline land and saline water on a sustained basis through the profitable and integrated use of genetic resources and improved agricultural practices. The utilization of saline land and water for agriculture and afforestation is now becoming an important element for the developing as well as the under developed countries with salinity, sodicity and waterlogging problems. The approach has recently been adopted in Pakistan for productive use of degraded
lands. This approach involves revegetation of saline and waterlogged land through growing salinity and waterlogging tolerant crops, trees, grasses and saltbushes.

QUESTION 55 : Role of Public and Private Sectors in Water Resources Development and Management

In many countries institutional reforms in irrigation and drainage system management towards stakeholder-controlled management are on-going. Transfers of systems, or of responsibilities are especially taking place in the following regions:

- Emerging developing countries: Asia, Central and South America
- Central and Eastern European Countries

These transfers may require quite different approaches. In the emerging developing countries there is generally a farmers population and until recently the main responsibility for operation and maintenance was generally in hands of the Central Government. In such cases the transfers concern the transfer of responsibility and may be of ownership of parts of the systems from the government to the farmers, and/or irrigation or drainage agencies. In the countries with a transition economy, specific problems concern: the layout of the systems, which is mostly based on the former large-scale type of agricultural production, the transfer of irrigation system management from the traditional government agencies towards water management agencies and water users associations, the funding of modernization and resulting operation and maintenance, lack of good governance, unaffordable pumping systems and environmental degradation. In some of the countries there is even not a clear farmer’s population. These issues make the transfer process quite complicated.

55.1 Performance of irrigation and drainage systems after modernization / privatization

After modernization/privatization irrigation and drainage systems will be operated and maintained under a different environment. Generally there are different responsibilities at main and filed system levels. Also new legislation will generally be applicable. In several cases changes in cropping patterns are being observed. Experience is being developed in various countries how these developments work out in practice. By the end of the day it will have to be verified if indeed yields have improved and the standard of living in the concerned area has risen. Papers are invited that describes cases where experience with the new developments has been obtained in practice. In addition papers are welcomed that show research results or new methods that deal with the issue at stake.
55.2 Socio-economic aspects of agricultural production in developing countries

In developing countries agriculture has often been strongly associated with livelihood and one may expect that for the short and medium range future this will remain so. However, one may also observe the development in these countries that agriculture for food production is to a large extent the cause of this. Although in many countries still price regulating mechanisms exist, with the globalization going on, it may be expected that the farmers who are engaged in agricultural production increasingly will have to compete at the world market. This will drive them in the direction of mechanized and larger scale farming, or of specialized high quality crops. Papers are invited that describes the various aspects that are guiding in this topic, or describe cases.

55.3 Technical, technological, economic and legal aspects of development, management and use of water resources of trans-boundary (interstate) rivers

Integrated water in management is widely supported as a principle. However, in practice there are many issues at stake that often make it very complicated to apply this approach. This is general the more so when the river basin is shared among provinces, states or countries. Items that play a role may be of different nature. They concern especially: Technical, technological, economic and legal aspect. In order to achieve an effective integrated water management these items have to be treated in a balanced way with the support of the stakeholders. Papers are invited for this topic that deals with the specifics of the individual items, as well as with the integration of these items and the modes to reach agreement. In addition cases dealing with certain river basins are invited.

B. SPECIAL SESSION : Implication of Global Changes on Irrigation and Drainage System Development and Management

In the coming decades population growth will particularly take place in the emerging and least developed countries. This implies that these countries will be confronted with the need to increase their food supply by a larger production in their own territory, may be in combination with increased imports. Having in mind the required increase in food production in combination with the need for sustainable rural development a wide range of issues is of importance. From the point of view of food production there is a common feeling that 90% of the required increase will have to be realized on existing cultivated land and 10% on newly reclaimed land. From the point of view of sustainable rural
development, socio-economic and environmental aspects play crucial roles. Developments in agricultural policies, crop prices, mechanization in agriculture, crop diversification, the developments in relation to the World Trade Organization (WTO) and the Millennium Development Goals (MDG) will all have to a certain extent their influence on agricultural production patterns.

With respect to water management related to agricultural production there are broadly speaking three agro-climatologic zones, viz: temperate humid zone, arid and semi-arid zone and humid tropical zone. In addition, in principle, four types of cultivation practices may be distinguished, viz: rainfed cultivation, without or with a drainage system and irrigated cultivation, without or with a drainage system. Dependent on the local conditions, different forms of water management with different levels of service will be appropriate. At present still the largest agricultural area is without any water management system. In the rainfed areas without a water management system, improvements can be achieved by water harvesting and watershed management. Such measures may be help to improve the livelihood of poor farm families. However, it may not be expected that the cultivated area without a water management system will significantly contribute to the required increase in food production. Due to this the share of irrigated and drained areas in food production will have to increase. This can be either achieved by installing irrigation, or drainage systems in the area without a system, improvement, or modernization of existing irrigation and drainage systems, installation of irrigation systems in the rainfed drained areas, or installation of drainage system in irrigated areas. In developing appropriate measures the environmental impacts have to be dully considered and compensatory measured may have to be required, especially in the emerging countries.

For this Special Session papers are being invited to deal with the following issues:

- Impacts of the required increase in food production and the need for sustainable rural development on irrigation and drainage system development and management;
- Developments in agricultural policies, crop prices, mechanization in agriculture, crop diversification, the developments in relation to the World Trade Organization (WTO) and the Millennium Development Goals (MDG) and their impacts on agricultural production patterns and water management needs.

C. SYMPOSIUM : Integrated Water Management in the River Basin Context

Integrated Water Management in the river basin context means focusing on coordinating conservation, management and development of water, land and
related resources across sectors with in a given river basin, in order to maximize the economic and social benefits derived from water resources in an equitable manner. Thus water needs to be managed for food and for sustainable urban and rural development at regional and river basin scale.

Global climatic changes have substantially affected the water resources. Some areas are experiencing higher flows due to increased rainfall and snow melt, while some areas are under the influence of droughts. Because of the large variability in river flows across seasons and years, flood protection works and artificial storage are important elements of river basin systems. The degree of control afforded by reservoirs varies enormously. The extreme flood events which many rivers basins experienced with in the last decades have shown that more than in previous times, technical flood protection measures are to be combined with land use changes which results in effective water retention and water discharge retardation and with other non-structural measures, like flood forecasting and evacuation. Such solutions are to be verified for their efficiency with respects to river basins as well as to floodplains. For the future development of sustainable landscapes, existing concepts will have to be evaluated for their monetary and non-monetary impacts and on their functionalities.

Due to the climate change, the irrigation sector has to cope with the higher water requirements and better water use efficiencies, and with the needs for more advanced water saving technologies. Dryness and drought are increasing and result in crop yield losses and restrictions in agricultural production. Due to reduced water availability, economically based decisions have to be taken whether to cultivate crops or varieties of higher dryness resistance, to extend irrigation if water is available or to move to other sites suitable for agricultural production. In relation to the development of irrigation the required increase in storages, either surface water reservoirs, or groundwater reservoirs, will play an important role, especially in the emerging countries.

Also in future, drainage will play an important role to allow agricultural production on sites affected by waterlogging and, under conditions of arid semi-arid climate conditions, to mitigate irrigation caused salinization of soils. Drainage technologies have reached a high level today. Future requirements will concentrate on purification of drain water from nutrients and pollutants as well as on the sustainable integration of drainage systems into the landscape scale.

To understand today’s situation and to plan for future needs, knowledge and analysis of the historic development of land and water management is prerequisite. To reach these targets it is of decisive importance to harmonize land use and water regimes at the landscape scale.
For this Symposium papers are being invited to deal with the following issues:

- Future water management and flood protection needs in relation to land use and climate changes in the river basin context;
- Role of storages in the development of water management and flood protection schemes in a river basin;
- Case histories.

**D. SEMINAR : Lessons to Learn from the History of Water Management in Large River Basins and Drought**

Development and management of water in large river basins has steadily progressed albeit slowly. However, many of large irrigation systems could not achieve expected performance due mainly to the problems associated with the management of water. Excessive use of water in upper reach and shortage of water downstream, resulting in water conflicts, waterlogging, salinization, and low productivity. On the other hand, the performance of small and traditional systems is comparatively satisfactory and well managed. In the Seminar, historical wisdom and knowledge accumulated in the experiences of managing small and traditional system will be discussed, and the approach of translating these lessons into the management of water of large systems, particularly during the period of drought or water shortage, will be examined.

**Topics to be covered are :**

Historical lessons and wisdom related to development and management of water in a large river basin -

- **Technical Issues (Planning and Design of System, Drought Management)**
- **Institutional and Legal Issues (Farmers Organizations, Federating Water Users Associations, Water Boards, Participatory Approach, legislations)**
- **Environmental Issues (Environmental Impact Assessments and Mitigation)**
- **Social and Economic Issues (Relocation/Resettlement and Compensation, Social Conflicts, Cost Recovery)**
SCHEDULE: Deadlines for Congress Questions, Special Session, Symposium and Seminar

• National Committees\(^1\) to intimate name(s) of author(s) of paper to the Central Office \(01\) August \(2007\)

• Submission of comprehensive “summary and conclusions” of about 500-600 words of the proposed paper to the Central Office by National Committees along with proforma at \textbf{Annex 1} \(01\) September \(2007\)

• Result of review/screening of “summary and conclusions” to be intimated by the Special Committee to the Central Office \(30\) November \(2007\)

• Intimation of acceptance of “summary and conclusions” of proposed paper by the Central Office to National Committees and authors \(15\) December \(2007\)

• Receipt of full text of accepted papers\(^2\) in electronic format and two hard copies in the Central Office along with proforma at \textbf{Annex 2} \(01\) March \(2008\)

SUBMISSION OF PAPERS

Three copies of comprehensive “summary and conclusions” of about 500-600 words of the paper proposed for the Congress are required to be sent by the authors together with the proforma given at \textbf{Annex 1} (page 17) to the ICID Central Office through the concerned National Committee no later than \(01\) September \(2007\). For definition of “summary and conclusions” please refer \textbf{Annex 3} (page 19). The National Committees and International Organizations can contribute papers for the Congress as follows:

A. Congress Questions

Each National Committee and ICID affiliated International Organization may submit one or several papers on the basic Questions of the Congress. Other invited International Organizations may submit only one paper each.

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\(^1\) For Congress Questions, National Committees need not intimate name(s) of author(s) of paper to the Central Office.

\(^2\) The papers can also be sent through e-mail along with the photographs, drawings embedded in the electronic version. Original photographs, drawings, sketches etc. should be sent separately for getting better resolution in print.
Nationals of non-member countries can also submit papers on the Congress Questions provided they bear charges at a rate of US$ 10 per paper.

B. Special Session

Each National Committee and International Organizations shall submit only one paper on any aspect(s) of the theme of the Special Session.

C. Symposium

The total number of papers for Symposium shall be limited to about 12. Each National Committee may submit only one paper.

D. Seminar

The total number of papers for Seminar shall be limited to about 12. Each National Committee may submit only one paper.

SELECTION OF PAPERS

Congress Questions and Special Session

In addition to the initial screening of the proposed papers ("summaries and conclusions") at the National Committee level, papers for the Congress Questions and Special Session will be further screened at the international level by the concerned Special Committee consisting of the General Reporter and Panel Experts. Only 5-10 papers will be finally selected per sub-topic of the two basic Questions for presentation at the Congress and for inclusion in the full-text of papers in the Congress Transactions on CD-ROM. In order to give opportunity to greater number of authors to make their presentations and have a closer and intensive interaction with the international participants, poster sessions will be organized for the Congress Questions. Full text of all accepted papers either for presentation at the Congress Session or at the Poster Session will be published in the Congress Transactions on CD-ROM. Three categories of authors for Poster Sessions have been identified as:

1. Authors who wish to present a paper in poster form only;
2. Authors of selected papers who wish to complement their papers with posters for its better comprehension (colour photographs, etc.);
3. Authors to whom the special committee, consisting of General Reporter and Panel Expert, indicate to present their paper as poster.

The decision of the Special Committee for Questions and Special Session regarding acceptance of papers with or without modifications, or rejection of any paper shall be final.
Symposium and Seminar

The papers will be reviewed by the Coordinators of Symposium and Seminar. His/her decision regarding acceptance of the paper with or without modifications, or not accepting the same shall be final.

GUIDELINES FOR PREPARATION OF ACCEPTED PAPERS

1. Focus on those aspects in which something original or of practical importance is to be contributed.

2. The range of each topic has been defined on the basis of the present knowledge of the topic. Original contributions on new aspects will be accepted on merit basis. Authors should note that a re-statement of well-known facts and principles, available in easily accessible publications, may not be accepted. However, if in presenting new facts and principles it becomes necessary to refer to old publications, this may be done as briefly as possible for clarity. References may be given to help interested readers to search deeper into the subject.

3. Authors may bear in mind that the aim of the Congress is to pool experience and knowledge, not only in basic principles but also with regard to field studies and actual results obtained in different countries. In discussing fundamental principles, however, authors should try, as far as possible, to refer mainly to their practical aspect. Experience has shown that purely academic discussions, whatever their intrinsic value, are not followed by the large majority of the audience in a Congress. It is, therefore, desirable that authors should concentrate and stress more on the practical aspects rather than the theoretical aspects. Again, in discussing field results and practical experiences, fundamentals should not be ignored entirely. It is only by a proper understanding and analysis of a given experience that the result can be applicable to similar circumstances, elsewhere.

4. The language of the paper should be either English or French.

5. The length of the paper should not exceed 2,000 words for case studies (i.e. equivalent of about 8 pages of A-4 size, typed in double space, including tables and figures) and 4,000 words for scientific/technical papers (i.e. equivalent of about 15 pages of A-4 size, typed in double space, including tables and figures).

6. The title of the paper should be as brief as possible, preferably not exceeding 70 characters and spaces. The translation of the title into the other language (in French, if the paper is in English and vice versa) should appear below the title in the language of the paper.
7. The author’s full name should appear below the title of the paper in the other language (see item 6 above) and a footnote stating present employment and complete address, fax, e-mail, telephone etc., must appear on the first page of the paper, separated from the text by a 4-cm rule.

8. The paper should contain an abstract of about 250 words in the language of the paper (English or French) and a “summary and conclusions” of about 500-600 words in the other language (French or English). The “abstract” and the “summary and conclusions” should precede in that order before the text of the paper. Guidelines for preparing abstract and “summary and conclusions” are given in Annex 2. Examples of the layout of pages, figures and tables are given in Annex 4.

9. It is imperative that the paper to be submitted must not have been published elsewhere prior to the date of the Congress. Material of an advertising nature may not be accepted.

10. The paper must be written in third person.

11. The data and numerical information should be given in metric units; and if necessary, equivalent units in British system may appear in brackets.

12. Detailed references should be given at the end of the text of the paper. References should be arranged in alphabetical order according to surname. The arrangement in an individual reference should be as under:

Name(s) of author(s), Year of issue, Title of publication or article, Name of Periodical or publisher, volume number, issue number, page numbers, language (if other than that of the paper).

Example:


GUIDELINES FOR PREPARING ELECTRONIC AND HARD COPIES

Authors are required to supply two copies of their paper along with an electronic version of the paper on CD-ROM in Microsoft Word format. Authors are advised to strictly follow the following guidelines for preparation of electronic and hard copies.

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• Page size A4 (Width 21 cms, Height 29.7 cms) with Top Margin 3 cms, Bottom Margin 3 cms, Left and Right Margins 3.8 cms.
• The title of the paper should be in capital letters (Font : Arial, Size : 14 points, all bold caps) in the centre of the page, and the author’s name should be two type spaces below the last line of the title in the other language. If there are more than one author, these should be on the same line one after another.

• Use quadruple spacing between the author’s name and the first main heading. Thereafter, use double spacing between headings and paragraphs and between paragraphs.

• Main headings to be in capital letters (Font : Arial, Size : 12 points, all bold caps) in centre of the page.

• Sub-headings to be in bold small letters (Font : Arial, Size : 10 points, all bold) starting flush to the left-hand margin.

• The general text to be in Arial with font size 10.

• Indent the paragraphs.

• An entire small section may be indented for emphasis.

• Use single spacing in the text. If a line contains scripts or indices, use 1½ spacing between that line and the next.

• Give equations/formulae in the centre of the page using 2½ spacing between text and equation, and in between equations.

• The captions of figures and tables should be given in two languages – in the language of the paper as well as in the other language (in French, if the paper is in English and vice versa).

**Figures**

• Insert figures in the appropriate area with a separate copy of the figures in another file. The inserted figures are required in high resolution format (TIF, jpeg etc.) with 150 dpi or more.

• Refer diagrams and photographs as figures in the text. Number the figures consecutively with Arabic numerals in the order reference is made to them in the text.

• Insert figure(s) as close as possible to its/their first reference in the text.

• Leave suitable blank spaces for figures while keying in the text of the paper in the computer.
• Type captions at the bottom of the figure (*in centre*) in both the official languages as shown below:

**Figure 1.** Irrigation supply and demand (Fourniture et besoins en eau d’irrigation)

• The word “Figure” and the figure number should appear in bold lower case as “Figure 1”.
• Figures may be either 120 mm wide or less. Full page figures could be in size of 125 mm x 220 mm.
• Line drawings should be made in black and white or colors in JPG/TIF/DWG/AI/EPS formats and inserted in the respective areas. Source files are also required in the CD for better resolution.
• Avoid excessive notes in figures.
• Photographs should be in color or black and white and stored in JPG/TIF format inserted in their respective areas. Source files are also required in the CD for better resolution with good contrast.
• Also, enclose two copies of Figures/Photographs separately.

**Tables and formulae**

• Insert tables and formulae as close as possible to their first reference in the text.
• Formulae, if more than one, may be numbered, consecutively.
• Number tables consecutively in Arabic numerals and provide them with suitable headings at the top (*in centre*) in both official languages as shown below:

**Table 1.** Performance indicators of irrigation technology (Indicateurs de performance de la technologie d’irrigation)

• Type “Table 1.” in bold lower case.
• Avoid abbreviations in column headings and indicate units in the line immediately below the heading.
• Give explanations, if any, at the bottom of the table, and not within the table itself.
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Limits for number of pages

The National Committees and international organizations associated with ICID can submit one or more papers of 25 pages or less each for each of the Congress Questions. Similarly in the case of the papers for the Special Session and the Symposium, the papers should be of 15 pages or less from each National Committee and the International Organizations.

Publication cost for non-members

From authors of non-ICID member countries, if their papers are accepted, the cost of including the papers in the CD-ROM will be payable in advance at the rate of US$ 10 per paper.
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Annex 3

GUIDELINES FOR PREPARING “ABSTRACTS” AND “SUMMARIES AND CONCLUSIONS” OF PAPERS FOR ICID CONGRESSES

1. Definitions

1.1 “Abstract” is a shortened or condensed version of the essential points of the paper within the prescribed limit of space. It should be an informative abstract providing “current awareness” information, i.e. the problem tackled (procedure and methods), factual resultant data and discussion, results and conclusions, in a condensed and convenient form.

1.2 “Summary and conclusions” is more comprehensive than “abstract” and contains more detailed information about the contents and conclusions of the paper. Besides enabling the reader to decide whether it merits his reading or not, the purpose of the “summary and conclusions” is to enable the scrutinizers to make correct appraisal of suitability or otherwise of the paper for the purpose for which it is being submitted.

2. Language of “abstracts” and “summaries and conclusions” of the papers

The official languages of the Commission are English and French. Papers are accepted in either of the two languages adopted by the author(s). “Abstracts” and “summaries and conclusions” of the papers for the Congress Questions, Special Session and the Symposium are invariably published simultaneously with the papers themselves. Accordingly all papers should contain an “abstract” in the language adopted by the author and also a “summaries and conclusions” in the other official language of the Commission.

3. Size of “abstracts” and “summaries and conclusions”

3.1 Abstract: about 250 words.
3.2 Summary and conclusions: about 500-600 words.
EXAMPLE OF LAYOUT OF PAGES, FIGURES AND TABLES
IRRIGATION FINANCING POLICY AND INSTITUTIONAL CHANGE IN THE PHILIPPINES

POLTIQUE DE FINANCEMENT DE L’HYDRAULIQUE AGRICOLE ET CHANGEMENT INSTITUTIONNEL AUX PHILIPPINES

Mark Svendsen

ABSTRACT

Irrigation investment in Asia has fallen sharply over the past decade, increasing the importance of improved performance in existing irrigation systems. An underutilized mechanism for accomplishing this, while reducing the drain on the government treasury, is the restructuring of irrigation agencies into financially-autonomous entities. In 1975, the Philippine government phased out operating subsidies to its National Irrigation Agency (NIA) over a 5-year period while allowing the agency to collect and retain its own revenues from farmers. NIA responded by (a) devolving responsibility for system management tasks to organized groups of farmers, (b) holding fee-based income constant in the face of deteriorating domestic terms of trade for agriculture, (c) slashing system operating costs, and (d) providing performance-based financial incentives to field staff. As a result, NIA recorded a net operating profit for the first time in 1979 and in 6 of the 7 years thereafter. At the same time, dry season area irrigated showed a 13 percent increase in sample systems. The programs developed by the agency to accomplish this are elaborate but straightforward and offer useful guidance to other countries faced with a similar challenge.

RESUME ET CONCLUSIONS

Depuis le milieu des années 60, le taux de croissance des surfaces irriguées en Asie a baissé de 72 %, ce qui suscite de graves inquiétudes au sujet de l’orientation et de l’avenir de la croissance agricole et du développement de cette région. L’application de techniques d’irrigation améliorées afin d’accroître la productivité des systèmes d’irrigation actuels, ne s’est pas avérée une option particulièrement réussie par le passé. Une seconde option, moins bien connue, consiste à modifier de façon fondamentale les techniques de gestion des systèmes d’irrigation utilisées traditionnellement. L’une des options qui comportent de bonnes chances de succès, consiste à doter l’agence d’irrigation d’une autonomie financière, et de changer radicalement les règles et les incitations qui déterminent les résultats de l’agence et de son personnel.

En 1975, le gouvernement des Philippines a pris des mesures visant à assainir la situation financière du service de l’irrigation (National Irrigation Administration - NIA) en éliminant progressivement les subventions au budget d’exploitation pendant une
période de 5 ans, tout en permettant à l’agence de recouvrer ses ressources propres auprès des agriculteurs et de les retenir. La National Irrigation Administration (NIA) a réagi par les mesures suivantes :

- restitution de la responsabilité en ce qui concerne certaines tâches de gestion du système à des groupes organisés d’agriculteurs
- maintien du revenu des commissions à un niveau constant en dépit d’une détérioration des termes de l’échange intérieurs des produits agricoles
- réduction sensible des coûts d’exploitation du système et
- octroi de primes de rendement au personnel de la NIA sur le terrain.

De ce fait, pour la première fois, la NIA a réalisé un bénéfice d’exploitation net en 1979 et pendant six des sept années qui ont suivi. Auparavant, le Trésor fournissait à la NIA une aide budgétaire annuelle importante. Dans le même temps, les surfaces moyennes irriguées en saison sèche ont augmenté de 13 % dans cinq systèmes échantillon, après avoir tenu compte des changements apportés à l’adduction d’eau.

Il ne faut pas soussémer l’importance de ces réalisations. Contrairement au nombre de services nationaux d’irrigation de la région qui se sont cramponnés à des règles et pratiques d’exploitation vieilles de plusieurs décennies, voire de plusieurs siècles, la NIA s’est transformée en une agence moderne orientée vers la gestion décentralisée, capable de changer ses objectifs, de s’assigner des objectifs et de gérer ses ressources de manière afin d’atteindre ces objectifs. Les documents dans lesquels sont consignés les mesures prises par le gouvernement et par la NIA pour accomplir cette transformation, sont disponibles. Ces mesures représentent des enseignements utiles pour d’autres pays qui souhaitent faire en sorte que leurs systèmes d’irrigation soient autonomes du point de vue financier, et améliorer le potentiel des systèmes d’irrigation concernés.

Des questions persistent. Il y a, en particulier, l’importante question de savoir quelles répercussions le fait que la NIA attache tellement d’importance à sa viabilité financière, a sur la réalisation de son mandat global qui est de fournir des services d’irrigation adéquats et en temps voulu aux agriculteurs. Il existe des liens évidents entre ces deux objectifs mais la nature exacte de ces liens n’est pas bien précisée. Néanmoins, la NIA, après avoir renforcé sa capacité de faire face au changement, est mieux à même de s’évaluer et de modifier ses objectifs afin de mieux réaliser ses objectifs sociaux plus larges. Toutefois, il est crucial que cela se fasse dans le respect des politiques de financement nationales qui exigent que la NIA jouisse de l’autonomie financière si l’attachement institutionnel fondamental à la gestion doit être préservé. Les solutions tendant à un retour à un système qui est tributaire des recettes fiscales générales, et qui est sous l’emprise directe de l’État, risquent fort de compromettre ces acquis.
1. INTRODUCTION

Since the mid-1960s the growth rate of irrigated area in the world has declined by about 60 percent; in Asia it has declined by 72 percent. Accompanying this slowing in the rate of expansion is a sharp reduction in irrigation investment. In Asia, where the bulk of the world’s irrigation is found, aggregate investments by four major international donors fell by about 50 percent, in real terms, between 1977-79 and 1986-87. These trends raise serious concerns about the direction and future of irrigation in Asia and its implications for agricultural growth and development (Rosegrant and Svendsen, 1992).

One resulting implication is that the hydrologic and agricultural performance of existing irrigation systems must improve if current rates of growth in agricultural output are to be sustained. Complicating this already challenging task, however, are several concurrent trends and conditions. These include increasing competition between irrigation sectors and municipal and industrial users of water, and the serious financial straits in which many Asian governments currently find themselves. The first of these factors thwarts the traditional solution of augmenting overall system water supply to improve water adequacy in poorly supplied portions of a system. The second factor largely precludes simply budgeting more money for irrigation system operations and maintenance, and higher levels of support to the agricultural sector.

What options are then available to us in attempting to improve the performance of Asian irrigation systems? One promising avenue is clearly new technology. This is a fundamental source of growth in output and productivity in any economic system, and continuing efforts to develop improved technology which will be effective in the Asian context are warranted. We must keep in mind, however, the very spotty record on our experience to date in adapting technology, successfully employed in the West, to a developing country setting, and the strong dependence of new farm-level technology on an effectively-managed main system.

4. NIA RESPONSES

NIA management responded to these charter changes with a fourfold strategy aimed at bringing its costs and revenues into balance. The strategy comprised actions to:

• Devolve responsibility for certain operational, maintenance, and fee-collection tasks to farmers,

• Increase corporate revenues by raising fees, improving collections, and generating secondary income from ancillary activities,

• Reduce operating costs through a series of minor economies and through major cuts in the personnel budget, and

• Provide financial incentives for superior performance to outstanding field units and to individuals in them.

4.1 Devolution

In 1980, following earlier successes in organizing farmers in the small-scale communal irrigation sector, NIA began experimenting with ways to organize farmers in its larger systems into effective irrigators’ associations which could assume responsibility for some canal maintenance and water allocation functions. By 1986, the area under various forms of farmer management had reached about 100,000 hectares out of a total of about 600,000 hectares of publicly-managed irrigation in the country. Schemes were classified as Stage I, II, or III, depending on the amount of responsibility transferred, with Stage III denoting the most extensive devolution of responsibility to farmers.

Table 1 shows the impact of these transfers in five sample systems. Depending on the specific type of devolution, reductions in NIA’s staffing levels in the affected

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Sources: Jopillo and de los Reyes, 1988 and Salandanan, 1988
Note: NIS stands for National Irrigation System.

systems ranged from 13 to 75 percent. This suggests a significant reduction in NIA’s operating costs, though not necessarily in total system operation costs, since the costs now borne directly by farmers are not included.

NIA’s income, operating expenses, and net income for these same systems are shown in Table 2. Income in 4 of the 5 systems increased following the shift to joint management, while operating expenses declined in 4 of the 5. Net income increased substantially in three of the systems and the operating deficit was reduced in a fourth. Net income declined slightly for the fifth system due to a sharp increase in NIA’s operating costs. From NIA’s point of view the change appears to have been a distinct success in financial terms.
4.2 Increase revenue

Immediately following the 1974 charter amendment, NIA obtained permission to increase its ISF rates. At the same time, fees were indexed for inflation by denominating them in measures of paddy. The effect of this increase, in real terms, is shown in Figure 2.

![Figure 2. Irrigation fee rates - Double crop diversion systems, 1938 prices (Tarifs des charges au titre de l’irrigation - Systèmes de déviation de double culture, prix de base 1938)](image)


REFERENCES


