NATIONAL SEMINAR ON
“PERSPECTIVE PLAN IRRIGATION SECTOR IN INDIA:
TO MEET THE CHALLENGES OF 21ST CENTURY”
New Delhi, 29th July 2009

Srisailam Project on the River Krishna in Andhra Pradesh, India

Organised by
PARLIAMENT MEMBERS FARMERS FORUM
&
CONSORTIUM OF INDIAN FARMERS ASSOCIATIONS (CIFA)

ASSOCIATES

FORO RURAL MUNDIAL
Agriterra
IFIA
IFFCO
CONSORTIUM OF INDIAN FARMERS ASSOCIATIONS (CIFA)

VISION

CIFA, is a national farmers apex body representing independent farmers associations from all parts of India. CIFA envisages farmers empowerment through resource management, participating in Agriculture planning, implementation, monitoring and establishing own professional organization at Apex level. CIFA is making efforts to reduce disparities between urban and rural, organized and unorganized sectors. It acts as a catalyst for unifying the farming community by developing consensus on issues and programs. It endeavours to protect the interests of the farmers, women, farmer labours and socially under-privileged from the neglect of Governments and exploitation of the organized sectors.

OBJECTIVES

CIFA objectives and efforts are directed towards establishing multiple organizational structures and translating activities into a wide range of short and long term programmes as follows.

- Establishing commodity wise vertical and area wise parallel organizations
- Provide administrative structures and experts advice.
- Build global competitiveness through technologies upgradation, Organic farming and research.
- Establishment of Agri-business Consultancy Centres.
- To assist in Processing, Contract Farming & Commodity Trading.
- Arrange Partnership with processing Industry, Exporters & Trade.
- Assist in establishing cooperatives for various purposes.
- Join international farmers organizations.
- Facilitating domestic and international farmers Exchange.
- Sensitization on social issues of women rights, child marriage, dowry etc.

Dr. Raghuvansh Prasad Singh, M.P.
Chief Patron
Basavaraj Thambake
President
P. Chengal Reddy
Secretary General

Trade increases the wealth and glory of a country. But, its real strength and stamina are to be looked for from among the cultivators of the land.”

- Lord Chatham

CONSORTIUM OF INDIAN FARMERS ASSOCIATIONS (CIFA)

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- Tel: 11-2564 2111, Fax: 011-2584 2123
- Website: www.indianfarmers.org
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A Presentation By
AKKINENI BHAVANI PRASAD
National Coordinator (Irrigation)-CIFA
General Secretary - Kisan Service Organization, AP
STATUS OF THE WORLD WATER

- Life of the mankind and all other flora & fauna on the face of the earth is influenced by WATER or Hydrological cycle.
- The availability of water in the world is FINITE and is difficult to create or destroy water under natural conditions.
- The total quantity of WATER available on earth today is same as if was millions of years ago.
- 97.5% of the World’s WATER is in the form of salt water located in the Seas and Oceans.
- Only 2.5% of the World WATER is considered as “FRESH WATER” and can be used by the mankind for their needs.
- Out of this 2.5% of FRESH WATER, 65% is located in the ICE-CAPS and is not available for the use of mankind.
- Availability of “FRESH WATER” is “SCARE” & not uniform through out the world.
  - India is having 16% of the World population, but the share of India in the World Water is only 4%.

Hence, “FRESH WATER” is a Scarce Commodity and is to be utilized in a Judicious Manner.
INCREASING DEMAND FOR WATER

The demand for the water is increasing in a rapid manner due to the population growth and Economic development.

The present population of India is about 108 Crores. Population likely to touch 132 Crores by 2025. Further, the population development touches 162 Crores by 2050.

The growing population needs about 360 million tones of food grains by 2025 and around 426 million tones by 2050.

At present, our food grain production is static around 200 to 230 million tones.

The growing population needs water for their own and other uses. According to Ministry of Water Resources, GOI, the demand for WATER will be as follows:

By 2010: Water requirement ranges from 694 to 700 BCM
By 2025: Water requirement ranges from 784 to 850 BCM
By 2050: Water requirement ranges from 973 to 1180 BCM

Hence, we have to plan for the additional needs of water by undertaking new projects as well as improving the water use efficiency in the existing projects.

SOME FACTS

- It is estimated that a quantity of 1700 Cubic Meters of water is required for each individual per year as per UNO.

- If a country experiences less water per person per year below 1700 cubic meters, the country is said to be experiencing “WATER STRESS”.

- Similarly if a country experiences less WATER per person per year below 1000 cubic meters, the country is said to be facing “WATER SCARCITY”.

- At present, the per capita availability of water in India is 1706 cubic meters per year as per CWC in 2005.

- According to World Water Council by the year 2025 about 48 countries with more than 2.8 billion people, will be effected by “WATER STRESS” and this population could be about 35% of the World population.
### WATER RESOURCES IN INDIA

<table>
<thead>
<tr>
<th>SL.NO.</th>
<th>PARTICULARS</th>
<th>QUANTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Annual Precipitation Volume (including snow fall)</td>
<td>4000 Billion Cubic Meters</td>
</tr>
<tr>
<td>2.</td>
<td>Average annual potential flow in rivers</td>
<td>1869 Billion Cubic Meters</td>
</tr>
<tr>
<td>3.</td>
<td>Estimated utilisable water resources</td>
<td>1122 Billion Cubic Meters</td>
</tr>
<tr>
<td>4.</td>
<td>Per capita water availability (2005)</td>
<td>1706 Cubic Meters</td>
</tr>
</tbody>
</table>

(Source: Central Water Commission, GOI)

### MAJOR RIVER BASINS IN INDIA

There are about 12 major river basins in India and they are as follows:

1. INDUS
2. GANGA - BRAHMAPUTRA - MEGHNA
3. GODAVARI
4. KRISHNA
5. CAUVERY
6. MAHANADI
7. PENNAR
8. BRAHMANI - BAITARINI
9. SABARMATI
10. MAHI
11. NARMADA
12. TAPI

The total catchment area is 252.8 Million Hectares.

The rain fall varies from 100 mm in Rajasthan to 11000mm in Chirapunji in Meghalaya.

Most of the rivers are Inter State Rivers flowing through 2 or 3 States.
**RIVER BASINS IN INDIA**

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**IRRIGATION POTENTIAL**

UIP, IPC AND IPU FROM MAJOR & MEDIUM AND MINOR IRRIGATION PROJECTS UPTO END OF IX PLAN

<table>
<thead>
<tr>
<th>NAME</th>
<th>ULTIMATE IRRIGATION POTENTIAL (UIP)</th>
<th>IRRIGATION POTENTIAL CREATED (IPC)</th>
<th>IRRIGATION POTENTIAL UTILIZED (IPU)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MAJOR &amp; MEDIUM</td>
<td>MINOR</td>
<td>TOTAL</td>
</tr>
<tr>
<td>All the States and UTs</td>
<td>5,84,66,000</td>
<td>8,14,28,000</td>
<td>13,98,03,000</td>
</tr>
</tbody>
</table>

Note: India is supporting 16% of the world population with a meager land mass of 2.45% of the World’s land mass. The Irrigation potential created so far is by way of constructing various projects across the river basins and sub-basins which are flowing through different states.

Today there are number of disputes existing for the use of Inter State River Waters by the Riparian States
EXISTING LEGAL FRAME WORK FOR SOLVING THE INTER STATE WATER DISPUTES

- India is a federal structure and is governed by a written constitution.

- As per the constitution of India
  
  Entry 17 in the States List
  Entry 56 in the Union List and
  Article 262

  are dealing with issues of WATER by both Central and State Governments.

- River Boards Act of 1956
- Inter State Water Disputes Act of 1956
- National Water Resources Council

Existing Legal Frame Work ............. Contd...

According to the provisions under entry 17 in the State list, Entry 56 in the Union list and Article 262 of Constitution of India, WATER is dealt by both State and Central Governments.

Entry 17 in the States list runs as “Water that is to say, water supplies Irrigation & Canals, Drainage, and Embankments, Water Storage and Water Power, Subject to the provisions of entry 56 list I”.

This provision clearly indicates that the states can exercise their power subject to Central Government acceptance.

Entry 56, in the Union list runs as follows:

“Regulation and development of Inter-State rivers and River Valleys to the extent to which such regulation and development under the control of the Union is decided by Parliament by law to be expedient in the public interest”
Existing Legal Frame Work ............... Contd...

But, so far the Parliament has made use of the powers under entry 56 of the union list in a limited manner and thereby the States are enjoying power as per entry 17 of the States list of the Constitution of India.

According to Article 262 of the Constitution of India, i) Parliament may by law provide for the adjudication of any dispute or complaint with respect to the use, distribution or Control of the Waters of any Inter-State river or river valley, ii) Notwithstanding anything in the constitution, Parliament may by law provide that, neither the supreme court nor any other court shall exercise jurisdiction in respect of any such dispute or complaint as is referred in clause i) above.

From the above, it stands to reason that the legislative competence of a State Government under entry 17 of the State List, must be exercised in such a manner as not to prejudice the interests of other states and create a water dispute within the meaning of Article 262 of the constitution of India.

Existing Legal Frame Work ............... Contd...

- As per the 73rd and 74th amendments carried out to the constitution, the local Governments are also empowered to manage the affairs related to Drinking Water, Watershed Development and Sanitation Water Management in their respective jurisdiction.

- In light of the above provisions as existing in the constitution the Water Management at different levels became a complex issue and is certainly creating a confusion.

National Water Resources Council:
- The council is headed by the Prime Minister of India as Chairman, the Union Minister of Water Resources as Vice-Chairman, all the Chief Ministers of State and several Central Ministers as Members is meeting once in a year and are discussing the Water Related Issues. But, as the council is not backed by any statutory powers.

River Boards Act of 1956
- The Indian Parliament has enacted the Act, under entry 56 of the Union List, to promote integrated and optimum development of Water flowing through the Inter State Rivers and River Valleys. As no powers given to these Boards to implement the advises given by them, the Act became non-functional.
Existing Legal Frame Work ............... Contd...

INTER-STATE WATER DISPUTES ACT-1956:

The Act provides a right to the Central Government for setting up of Tribunals for the adjudication of Water disputes between the States.

EXPERIENCES:
Mandovi River:
There is a dispute for the water usage from this river among the states of Karnataka, Maharashtra and Goa

Godavari River:
There is a dispute going on in the Honourable Supreme Court of India between Maharashtra and Andhra Pradesh, on account of the construction of Babli Project by Maharashtra within the territorial water of Sri Ram Sagar Project of Andhra Pradesh.

EXPERIENCES

Krishna River:

Krishna Water disputes tribunal has been appointed in 2004. The issue of sharing the waters among the states of Maharashtra, Karnataka and Andhra Pradesh is progressing. Both Karnataka and Andhra Pradesh have filed petitions before the Tribunal stating that the other state is constructing illegal Projects and Bridge cum Barrages on River Krishna.

Cauvery River:

Cauvery River water disputes tribunal has been constituted by the Government of India 1990 and the final report has been submitted, but the states have not agreed to the report.

Ravi-Beas River:

Ravi – Beas Water Tribunal was constituted in 1986 but, the final order is yet to come. It is to note that the Punjab legislative assembly has passed a resolution nullifying all the earlier agreements entered between the states of Punjab, Rajasthan, Delhi and Jammu & Kashmir and the Government of India has remained a mute spectator.
Existing Legal Frame Work ............... Contd...

There are enormous delays in the establishment of a Tribunal, conducting the proceedings by the Tribunal, giving the Award, the process of further references and supplementary clarifications or orders, and finally the notification of the award by the Central Government.

Adjudication is an unsatisfactory way of dealing with a water dispute and a negotiated settlement between the parties would be definitely a superior and workable model.

The Sarkaria commission have gone through the difficulties experienced and suggested certain amendments fixing time limit for each step of a Tribunal which were enacted as amendments to the Inter State Water Disputes Act 2002. But, the delays in forming the Tribunals and their work is still to be improved.

WHAT IS TO BE DONE?

- The Inter-State river water management should be undertaken by the Government of India, if need be, by a statutory means, and supported by a River Board comprising the Technical Experts and Stakeholders of the States Concerned. The River Board must have the powers to implement the decision/advise given by them.

- The states must restrict themselves to monitor and manage the water allocated and received by them through Inter State River authorities with formation of a Mechanism at every level with Technical experts as well as stake holders as partners.

- The Traditional practices followed by the communities and International law/conventions on Water issues are to be respected and implemented in an effective manner.
WHAT IS TO BE DONE?.....Contd....

- The participation of the Stakeholders right from investigation of a project till the completion of the project will go a long way in the subsequent efficient Water Management under the project.

- The authorities / boards proposed to be created at various levels should be free from political clout and backed by statutory provisions.

The Parliament of India, being the Supreme Policy Making Body in the Country, should come forward to use the powers vested under constitution of India, particularly under entry 56 of Union List, to form a National Level River Authority with independence in similar lines to that of the Election Commission of India on PRIORITY basis.

INTERLINKING OF RIVERS

In the year 1865, Sir Arthur Cotton has proposed the Interlinking of Rivers in India with a view to create water ways and connect the whole country. Later, several of our eminent Engineers like Padmavibhushan K.L. Rao have suggested to have the Interlinking of Rivers.

Long distance Inter Basin transfer of water has been in practice in India for over 500 years.

- The Periyar project is the most notable link endeavoured in the 19th Century. A 47.28 meter high gravity dam was constructed across a gorge on the West flowing Periyar River. A 1740 meter long tunnel with a discharge capacity of 40.75 cubic meters was drilled across the mountain barrier to convey the waters East-wards to the Vaigai River. The project was commissioned in 1895 and provide Irrigation to about 58,000 Hectares and later extended to 80,000 hectares. 140 Mega Watts of Power is also being generated.

- The USA which is a Water rich and scarcely populated country is transferring 45 Billion Cubic Meters (BCM) of water through inter-basin water transfer and plans to add 376 BCM.

- China has a scheme under implementation for a transfer of 45 BCM of water through Inter Basin Transfers.

At present, India is transferring only about 10 BCM of water through Inter Basin Transfers but, there is a potential of nearly 200 BCM of water which can be transferred through Inter Basin Transfers.
INTER BASIN TRANSFER OF WATERS BENEFITS

- Will provide additional Irrigation facilities to about 35 million hectares of land.
- Reduces the regional imbalances in the availability of water in different regions.
- Construction of Storage reservoirs as proposed will reduce the floods and the resultant damage.
- Benefits the drought prone areas of 11 states by providing Irrigation facility to an extent of 25,00,000 hectares of land.
- Hydro power can be generated to the extent of about 34,000 MW in addition to the existing 22,000 mega watts.

CONCLUSION

At the beginning of the Xth Plan the following projects with a spill over cost as mentioned against each are ongoing for the last 2 decades in different states.

<table>
<thead>
<tr>
<th>SL. No</th>
<th>DETAILS OF THE PROJECT</th>
<th>SPILL-OVER COST (CRORES)</th>
</tr>
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<tbody>
<tr>
<td>1.</td>
<td>162 MAJOR PROJECTS</td>
<td>1,40,968.79</td>
</tr>
<tr>
<td>2.</td>
<td>221 MEDIUM PROJECTS</td>
<td>12,786</td>
</tr>
<tr>
<td>3.</td>
<td>85 EXTENSION, RENOVATION AND MODERNIZATION PROJECTS</td>
<td>21,256</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>1,75,010.79</td>
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</tbody>
</table>

But the budget allocations from the GOI budget is so low that it may take another 2 decades to complete these projects.

It is suggested that the honourable Members of Parliament make an effort to impress the Government of India, the necessity of completing these projects in a time scheduled frame work, say 5 years by allocating the necessary funds from Government of India Budget.

The inter linking of river project has to be under taken by the Government of India as a national project in line with that of National Highway Authority of India or the Election Commission of India.
PERSPECTIVE PLAN FOR IRRIGATION SECTOR IN INDIA: TO MEET THE CHALLENGES OF 21ST CENTURY

Akkineni Bhavani Prasad
National Coordinator (Water Resources)
Consortium of Indian Farmers Associations (CIFA)

INTEGRATED WATER RESOURCES AND RIVER BASIN MANAGEMENT IN INDIA:

Mankind has been blessed with several bounteous natural resources and WATER is one among them. The source of life on Earth is WATER and the human body consists of about 70% of WATER only in the shape of fluids. If fluids in the human body diminish by 10% the risk of Death will be hanging on the person. From this we can understand the importance of Water in Human Life. The world’s population is nearly 6 million in 2002 and is growing by about 80 million people each year. India’s population is about 100 Crores+ and the population growth rate is around 1.9% per year and about 19 million people are added each year to India’s population.

A country is said to experience “Water Stress”, when water supply falls below 1700 Cubic Meters per person per year. Once, if a country experiences WATER SCARCITY, we can expect chronic shortage of fresh water which will threaten food production, hinder economic development and damage the ecosystem. By the year 2025, about 48 countries with more than 2.8 billion people, will be affected by “Water Stress” or scarcity and this population is about 35% of the world population.

The following table will show the Water Resources of India for your information:-

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(Source: Central Water Commission, GOI)

These figures will remind every one of us about the importance of WATER in the years to come. Hence, there is definitely a need to think and plan about WATER Management.

In India, the major sources of Water are rivers flowing across the country (Surface Water), ground water and the annual rain fall. It is high time for the policy makers and the Government to give a serious consideration for the integrated water resource Management of the waters available with us and evolve the policies necessary for a proper management of the WATER.
WATER AND THE CONSTITUTION OF INDIA:

According to the provisions under entry 17 in the State list, Entry 56 in the Union list and Article 262 of Constitution of India, WATER is dealt by both State and Central Governments.

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But, so far the Parliament has not made any effort to use the powers under entry 56 of the union list, and thereby the States are enjoying power as per entry 17 of the States list of the Constitution of India.

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From the above, it stands to reason that the legislative competence of a State Government under entry 17 of the State List, must be exercised in such a manner as not to prejudice the interests of other states and create a water dispute within the meaning of Article 262 of the constitution of India.

In addition to the above, there is now a 3 tier system in the constitutional structure, as per the 73rd and 74th Amendments carried out to the Constitution of India. Under this the local Governments are to manage the affairs related to Drinking Water, Watershed Development, Sanitation and Water Management in their respective Jurisdiction.

Under the 42 Amendment of 1976 to the Constitution of India, references were made for the protection of the Environment, Forests and Wildlife through Article 48A and 51A.

In light of the above provisions as existing in the Constitution of India, we feel that the WATER Management at different levels became a complex issue and is certainly creating confusion. It could be seen that there is no legal reference to the WATER as a basic essential component of Life and thereby as a basic human and animal right. Also age old Traditional WATER harvesting and WATER Management practices followed by the communities were not reflected in our Constitution.

National Water Resources Council was established by a resolution of the Government of India without a statutory backing. The council is headed by the Prime Minister of India as Chairman; the Union Minister for Water Resources will be the Vice-Chairman, all the Chief Ministers of the States and several Central Ministers as members. The million dollar question would be whether this NWRC will be able to manage the affairs of water management at various levels without a statutory backing?

RIVER BOARDS ACT 1956:

The Indian Parliament has enacted the River Boards act 1956 under entry 56 of list I, to promote Integrated and optimum development of waters flowing through the Inter State River and River Valleys. According to the Act, the Boards are having no powers for implementation of their advises i.e., to say the Boards remain as advisory Boards only. Later the Act was amended to provide River Basin organization for each major River Basin in the country.
INTER-STATE WATER DISPUTES ACT-1956:

The Act provides a right to the Central Government for setting up of Tribunals for the adjudication of Water disputes between the States.

EXPERIENCES:

- **Mandovi River:**
  There is a dispute for the water usage from this river among the states of Karnataka, Maharashtra and Goa.

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  The Sarkaria commission have gone through the difficulties experienced and suggested certain amendments fixing time limit for each step of a Tribunal which were enacted as amendments to the Inter State Water Disputes Act 2002. But, the delay in forming the Tribunals and their work is still to be improved.

FINANCIAL ASPECTS:

The 1st Prime Minister of India Sri Jawaharlal Nehru called the Irrigation Projects as “Modern Temples” and gave the utmost importance for their construction and funds were made available through the 5 year plans. Initially, the funds used to be around 22.50% of the plan outlays and today it has come down to just 6.5%.

The projects which were commenced in 1950s are yet to be completed. Also, there are 162 Major, 221 Medium and 85 Extension, Renovation and Modernization Irrigation Projects across the country were ongoing for the last 2 or more decades in several States as the State Governments are unable to provide the necessary funds from their budget.

SUGGESTIONS:

1. The Inter-State river water management should be undertaken by the Central Government, if need be by a statutory means, and supported by a River Board comprising the Technical Experts and Stakeholders of the States Concerned. The River Board must have the powers to implement the decision/advice given by them.
2. The states must restrict themselves to monitor and manage the water allocated and received by them through Inter State River authorities with formation of a Mechanism at every level with Technical experts as well as stake holders as partners.

3. The Traditional practices followed by the communities and International law/conventions on Water issues are to be respected and implemented in an effective manner.

4. The participation of the Stakeholders right from investigation of a project till the completion of the project will go a long way in the subsequent efficient Water Management under the project.

5. The authorities / boards proposed to be created at various levels should be free from political clout and backed by statutory provisions.

6. The on-going 183 Major & 256 Medium Irrigation Projects which are half-way through in different states are to be completed by providing, say @ Rs.50,000 Crores from the National Budget of the Central Government under AIBP and a time frame of five years be fixed for completion of the projects.

MANAGEMENT INTERVENTIONS TO IMPROVE WATER USE EFFICIENCY:

Despite major achievements in expanding the irrigated area and in increasing and stabilizing the agricultural production, many major and medium irrigation schemes are performing far below their potential due to certain operational and maintenance deficiencies. The water use efficiency in traditional surface irrigation systems is estimated as low as 30-35% against 50-60% in some developed countries. Even a marginal improvement in the efficiency of water use to about 40-45% will result in saving about 30% volume of water which can be utilized for extending the irrigated area.

Major part of the failure is attributable to the management deficiencies resulting in inefficient and inequitable delivery of water to the agriculture farms and sub-normal farm development. Some important aspects concerning improved water management are dealt with in the following paragraphs. By adopting these managerial interventions the water-use efficiency and thereby the productivity of Irrigated agriculture are sure to be improved.

i) OPERATIONAL PLANNING:

Timely and Equitable distribution of water to the field and adoption of proper application methods have great bearing on water-use efficiency and productivity of crops. Generally, farmers in the head reach having better accessibility, not knowing the implications of excessive water application to their fields, are tempted to draw excess water. They not only suffer by way of low production and damage to their lands but also deprive the farmers in the lower and tail-end reaches of their legitimate share of Irrigation supplies. Therefore, it is necessary to ensure equitable, timely and efficient water utilization in the system by organizing irrigation scheduling and coordinated water delivery plan.

An operation plan together with irrigation scheduling is an effective tool to put constraint on the top-end farmers from drawing excessive water and thus ensuring equitable distribution of water among all the farmers. So there is an imperative need to implement operation plans for all the projects in the state in the interest of conservation of scarce water.

ii) CONJUNCTIVE USE OF SURFACE AND GROUND WATERS:

Development of surface (canal water) irrigation, which has been under practice for centuries in India, has
resulted in degradation of land in some of the commands. Gradual rise in water table and related problems of water-logging and soil salinity/alkalinity have surfaced mainly because of lack of effective drainage system, improper water management, inadequate maintenance of distributory system etc. Integrated and coordinated development of surface and groundwater is the most suitable strategy for irrigation development in alluvial soils. Conjunctive use of surface and ground water will not only increase the irrigation potential but also mitigate the problem of water-logging by keeping down the groundwater level to a safe limit.

As the farmers in the command areas are habituated to get irrigation supplies by inexpensive gravity flow at their fields, they may not be enthusiastic to drill bore-wells and tap groundwater at their expense. So, in the interest of conserving surface water and controlling the underground water table without causing damage to the Crops, it is advisable that the Government may provide financial assistance to the command area farmers in this regard. This should be made mandatory in all command areas in the interest of conserving canal water to a considerable extent.

iii) RE-USE OF IRRIGATION WATER:

The entire water applied on the agricultural farms is not consumed by evapo-transpiration or percolation into the soil. About 15-20% of water applied, flows out of the farms either as surface water or sub-surface flow into the neighbouring drains and from there it reaches a river. The water reaching drains from agricultural farms may be diverted by gravity, wherever feasible, or pumped back and re-used for irrigation. This water diverted for re-use is a boon to the tail-end reaches of the distributory system, which do not receive the allocated flows normally.

iv) IMPROVED METHODS OF IRRIGATION - SPRINKLER AND DRIP SYSTEMS:

Improved methods of Irrigation like sprinkler and drip are being recommended for achieving higher irrigation efficiencies.

In sprinkler system, water is conveyed through a network of pipes under pressure and sprinkled on crops as drops forced through nozzles of smaller diameter. Sprinklers tend to irrigate more uniformly than gravity systems and therefore, efficiencies typically average about 70%. As there is negligible percolation into the soil, lot of water is saved in sprinkler system of irrigation. Sprinkler system is particularly effective in sandy and undulating terrain.

In drip irrigation system, a network of porous or perforated piping installed on or below the soil surface, delivers water directly to the Crop roots. This keeps the evaporation and seepage losses extremely low. To sufficiently irrigate the same crop, drip systems may apply 20 to 25% less water to the field than conventional sprinklers and 40 to 60% less than the simple gravity systems. For fruits, vegetables and orchard crops, drip irrigation is found to be more suitable, particularly in the regions of low rain fall.

v) SYSTEM OF RICE INTENSIFICATION (SRI):

"Less can produce more" is the motto of the system of rice intensification. It means, with usage of about half the quantity of water that is normally used in the conventional gravity flow system, productivity of Crop of 2 to 3 times can be achieved. As rice crop in the country consumes major share of Irrigation supplies, adoption of SRI can save huge quantities of water to increase the Crop yield by 2 to 3 times of the normal system in vogue. A comparative statement of the various items in the SRI system is given below:-
<table>
<thead>
<tr>
<th>S.NO.</th>
<th>ITEM</th>
<th>AS PER THE TRADITIONAL SYSTEM</th>
<th>AS PER THE SRI</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Seedbed area per acre of cropped field</td>
<td>5-10 cents</td>
<td>1 cent</td>
</tr>
<tr>
<td>2.</td>
<td>Seeds per acre of cropped field</td>
<td>20 kgs.</td>
<td>2 kgs.</td>
</tr>
<tr>
<td>3.</td>
<td>Nursery period</td>
<td>25-30 days</td>
<td>8-12 days</td>
</tr>
<tr>
<td>4.</td>
<td>Fertilizers</td>
<td>More chemical fertilizers</td>
<td>Minimum or no chemical fertilizers and more organic manure.</td>
</tr>
<tr>
<td>5.</td>
<td>Watering</td>
<td>Field always under inundation</td>
<td>Soil moisture is maintained, hence saving of water about 50%</td>
</tr>
<tr>
<td>6.</td>
<td>Average productivity per acre</td>
<td>2250 kgs</td>
<td>4000 to 7000 kgs.</td>
</tr>
</tbody>
</table>

In the interest of achieving higher yields and conservation of water, the State Government should encourage farmers to adopt System of Rice Intensification in all the Lift Irrigation Schemes. It may also be considered to make this SRI practice to paddy crop mandatory in as many commands as possible in the State.

**vi) VOLUMETRIC MEASUREMENT AND RATIONAL PRICING OF WATER:**

Water, no doubt, is a gift of Nature. But for the water, to reach a consumer there is a value addition. It is, therefore, very necessary to run water supply systems on commercial principles treating water as an economic good and not a free commodity. Unless the water is metered and a rational price is attached to the protected water supply similar on the lines of power supply be it for drinking purpose, irrigation or industrial use, it will continue to be looked up on as a more or less free commodity and used wastefully to a larger extent. The water rates should meet at least the operation and maintenance charges. Hence, water is to be billed on volumetric basis and collected strictly, to foster the motivation for economy in water use by the consumers. While fixing water rates for irrigation, the support price for the produce should also be taken into consideration.

**vii) RENOVATION OF TANKS:**

Tanks have been traditionally been an important source of irrigation in South India. Proper maintenance has always been the key of reaping the full benefits of this inexpensive source of water for irrigation as well as domestic purposes. But due to deterioration in the status of tank bunds, most of the tanks are frequently breaching even due to normal rains and getting emptied. Hence, the renovation and modernization of tanks of strengthening of bunds, improving of surplussing arrangements, restoring its original capacity and integrating the tanks with major canal systems, wherever feasible, should form one of the strategies of water conservation.

**viii) PARTICIPATORY IRRIGATION MANAGEMENT (PIM):**

The present mindset of a majority of the population is that “Water is Government's Business”. Unless human conduct towards water changes drastically, technological solutions will be of not much use. It has already been recognized that unless farmer community is involved in an organized way in the operation,
management and maintenance of irrigation systems, the objective of increased utilization and production from irrigation commands cannot be realized, and even if realized cannot be sustained in the long run.

Many shortcomings of present irrigation management could be reduced by effectively involving farmers in the Irrigation Management. Formation of farmers' associations at minor, distributary and project levels offers considerable scope to improve the present situation. In the PIM system, the department is responsible for supply of water at the head of the distributary or minor and below the head, Water Users Associations (WUAs) would be responsible for distribution, operation, maintenance and management of the secondary and tertiary portions of the distribution network. Within the area of operation of WUAs, the role of the Government would be advisory and limited to the technical and financial assistance to WUAs.

The State of Andhra Pradesh has already passed legislation in this regard in 1997 and has been implementing the Act with partial success due to various deficiencies. Such act may have to be improved and implemented in the entire Country, and this goes a long way in promoting water productivity in agricultural sector.

ix) RECHARGING OF GROUND WATER:

Groundwater has played a significant role in India's economy. The source has gained importance as a source of drinking water and food security. It is contributing at present about 50% of Irrigation water and 80% of water for domestic use in rural areas and 50% of water for urban and industrial areas. Because of the groundwater abstraction structure being under the direct control of the users, groundwater has become the preferred source of water users. Hence, utmost care should be taken to maintain a balance between the recharge through rainwater source and exploitation by pumping for various purposes. If properly recharged through the traditional system of watershed management, percolation tanks, etc., the groundwater source will be a boon for the drought-prone areas.

By adopting all the above suggestions, the Water productivity in Agricultural sector can be improved to a considerable extent in the country.
<table>
<thead>
<tr>
<th>Plan (1)</th>
<th>Potential Created</th>
<th>Potential Utilised</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Major &amp; Medium</td>
<td>Minor</td>
</tr>
<tr>
<td></td>
<td>(3) (4) (5) (6)</td>
<td>(7) (8) (9) (10) (11)</td>
</tr>
<tr>
<td>Cumulative</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upto 1951</td>
<td>9.70</td>
<td>6.40</td>
</tr>
<tr>
<td>(Pre-plan)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I Plan</td>
<td>2.50</td>
<td>0.03</td>
</tr>
<tr>
<td>(1951-53)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>II Plan</td>
<td>2.13</td>
<td>0.02</td>
</tr>
<tr>
<td>(1956-61)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cumulative</td>
<td>14.33</td>
<td>6.45</td>
</tr>
<tr>
<td>III Plan</td>
<td>2.24</td>
<td>0.03</td>
</tr>
<tr>
<td>(1961-66)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cumulative</td>
<td>16.57</td>
<td>6.48</td>
</tr>
<tr>
<td>Annual Plans</td>
<td>1.53</td>
<td>0.02</td>
</tr>
<tr>
<td>(1966-69)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cumulative</td>
<td>18.10</td>
<td>6.50</td>
</tr>
<tr>
<td>IV Plan</td>
<td>2.60</td>
<td>0.50</td>
</tr>
<tr>
<td>(1969-74)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cumulative</td>
<td>20.70</td>
<td>7.00</td>
</tr>
<tr>
<td>V Plan</td>
<td>4.02</td>
<td>0.50</td>
</tr>
<tr>
<td>(1974-78)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cumulative</td>
<td>24.72</td>
<td>7.50</td>
</tr>
<tr>
<td>Annual Plans</td>
<td>1.89</td>
<td>0.50</td>
</tr>
<tr>
<td>(1978-80)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cumulative</td>
<td>26.61</td>
<td>8.00</td>
</tr>
<tr>
<td>VI Plan</td>
<td>1.09</td>
<td>1.70</td>
</tr>
<tr>
<td>(1980-85)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cumulative</td>
<td>27.70</td>
<td>9.70</td>
</tr>
<tr>
<td>VII Plan</td>
<td>2.22</td>
<td>1.29</td>
</tr>
<tr>
<td>(1985-90)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cumulative</td>
<td>29.92</td>
<td>10.99</td>
</tr>
<tr>
<td>Annual Plans</td>
<td>0.82</td>
<td>0.47</td>
</tr>
<tr>
<td>(1990-92)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cumulative</td>
<td>30.74</td>
<td>11.46</td>
</tr>
<tr>
<td>VIII Plan</td>
<td>2.21</td>
<td>1.05</td>
</tr>
<tr>
<td>(1992-97)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cumulative</td>
<td>32.95</td>
<td>12.51</td>
</tr>
<tr>
<td>IX Plan</td>
<td>4.10</td>
<td>3.59</td>
</tr>
<tr>
<td>1977 - 2002</td>
<td>37.05</td>
<td>16.10</td>
</tr>
</tbody>
</table>
Kisan Service Organization, A.P., is an independent farmers Organization working for the cause of agriculture and farmers, beyond any political, regional or religious consideration. The Organization is affiliated to CIFA at the national level.

Reflections of KSO Logo:

1. The Green circle in which the name of the Organization is printed depicts the color of pleasant Nature from which the Kisan (Farmer) is inseparable.

2. The Sunflower with its Yellow color inside the green circle indicates Auspiciousness.

3. The Indian women farmer is projected with traditional "Kumkuma" on her forehead, without whose efforts the agriculture wouldn't have flourished. The smiling face of the women farmer indicates the result of her family's efforts in reaping a good harvest and acts as a driving force for future.

4. The "Welfare of the Farmer is the Welfare of the Nation" printed at the bottom of the logo in Red is indication of 'Farmer's Srama Sakthi' who pours all his energies to provide Food Security for the Nation.

We salute the women farmers of rural India, for their concentrated efforts to elevate our country to No.1 position in the World, in milk production by producing more than 100 million tons in the last 5 years consecutively.

Dr. Y. Hanumantha Rao  
President

Akkineni Bhavani Prasad  
General Secretary
CONSORTIUM OF INDIAN FARMERS ASSOCIATIONS (CIFA)

AIMS & OBJECTIVES

- To bring unity amongst all farmers associations, women groups, Panchayatiraj Institutions, Water Users, Commodity Associations, as a cohesive and functional organization.

- To act as representative of all categories of Farmers including Rural Women and assist them in articulating their views with the Central and State Governments, Financial Institutions, Research, CACP, CII, NAFED, World Bank, FAO and others.

- To create awareness amongst intellectuals on the key role of agriculture and its valuable contribution as a key sector for economic and social development of India.

- Establish Forums of MPs, MLAs to support the cause of farmers.

- To analyse, study and take appropriate steps and deal with issues connected with Patent Rights and WTO.

- Propagate usage of non-conventional energy including biodiesel.

- To assist in reducing physical drudgery for women & labour.

- To organize social, cultural & sports events and honour progressive farmers and experts.

- Explore global agricultural opportunities for Indian farmers and work with International Farmers Organizations.

MEMBERSHIP

- State level Farmers Federations, Women groups (SHG), Commodity groups, sugar, horticulture, commercial crops, cooperatives, water users, Dairy, aqua farmers, Panchayat Raj Institutions and others.

- CIFA will not be affiliated to any political, caste or organizations.

- MPs, MLAs & MLC are not allowed to hold executive post.

- For details write to our office or visit: www.indianfarmers.org

INNOVATIVE INITIATIVES

- Parliament Members Farmers Forum (PMFF) :
  To articulate farmers issues in Parliament & Government through M.Ps Farmers Forum.

- Publication Division : Agri Policy dvocacy
  To sensitize policy makers, intellectuals, industry and farmers leaders, through journalists, reporters etc.,

- Establishment of Info centre:-
  www.indianfarmers.org:

- News transmitting - INFO dissemination:
  a. Government Schemes
  b. Business Opportunities
  c. Farmers Marriage Bureau
  d. Indian Industry & Farmers alliance
Mahatma Gandhi Ji, “Father of The Nation” who has played a key role in achieving independence to INDIA, through his weapon “Non-Violence” has once said that “NATURE HAS PROVIDED EVERYTHING FOR ONE’S NEED, BUT NOT FOR GREED”

May we request everyone to keep the above saying at the back of our minds, so that we can retain the Federal Structure of our Country and with a spirit of cooperation & understanding.