INTERNATIONAL COMMISSION ON IRRIGATION AND DRAINAGE (ICID)

COUNTRY POLICY SUPPORT PROGRAMME (CPSP)

1. Background

As an aftermath to the Earth Summit, several institutional arrangements came into being to address issues related to the freshwater. The WWF2 was held at The Hague in March 2000 in which the 'World Water Vision' for the year 2025 was propounded. It comprised basically three components, viz. water for food (agriculture), water for people (drinking, domestic, sanitation, industry, energy), and water for nature (eco-systems). ICID took active part alongside other international organisations, in bringing out the 'Water Vision For Food and Rural Development (WFFRD)' through consultations held in 43 countries of its membership including basically the five major irrigating countries, viz. China, Egypt, India, Mexico and Pakistan accounting for 43% of world's population and 51% of world's irrigated area. All these countries had then developed 'Country Position Papers' enunciating their perceptions on projected use of WFFRD and emphasising the close link between agriculture and rural development. The vision was supported by assessments by Food and Agriculture Organisation (FAO), International Water Management Institute (IWMI), International Food Policy Research Institute (IFPRI) besides others. It projected for the world population of 2025 and for food and rural development, an increase in global water withdrawal by 17%, storage by 13%, irrigated area by 18% and funding by about 3 times, assuming a maximum improvement in water use efficiency that was likely to be achieved by then.

It was recognised that the projected need significantly masked the variations in agro-climatic regions and country to country. In particular it was seen that for the developing countries, these needs were significantly high. The integrated 'Overview Vision' scaled down the findings of WFFRD, respectively projecting instead the figures of 6 to 9%, nil, nil, and funding at little more than present, giving rise to serious anomalies. Also, no effort was made at enunciating integrated water resources development and management (IWRDM) options to meet with future water needs for the three sectors. The vision and the framework for action therefore remained hazy.

During the run up to the WWF2, recognising the versatility and simplicity of the IWMI's **PODIUM**, it was felt that ICID could work further through its National Committees on the PODIUM to improve the model itself and to apply it at country, and where possible, at basin level to enable a second round of consultations for firming up the assessments and integration of water needs for the three sectors as far as possible.

2. ICID Strategy and Country Policy Support Programme (CPSP)

After the WWF2, ICID adopted in the year 2000 a 'Strategy for Implementation of ICID's Concerns emanating from the vision' for presentation in the WWF3. As a part of this strategy, a more detailed assessment supported by such fresh 'consultations' at basin, national and global level was envisaged. A project titled as 'Country Policy Support Programme (CPSP) for implementation in two phases was formulated in consultation with several experts. The IWMI, IFPRI, FAO (IPTRID), and the World Bank enthusiastically agreed to act as 'Contributing Organisations' (COs) in this project. The project was submitted for funding support to the Dutch Government. After a series of discussions and revisions, the project was approved for phase 1 for a period of 2 years starting from July 2002.

2. Objectives of Country Policy Support Programme (CPSP)

The CPSP essentially serves as a support programme to the water related policies of the concerned ICID member countries through realisation of following objectives:

1. To compile existing information on country policies, strategies and framework for irrigation-drainage-flood management and updating Knowledge Base (KB);
2. To assess water requirements in two sample river basins each in India and China for integration of water needs for the three sectors – Food, People and Nature;
3. To hold broad-based dialogues/consultations primarily in China and India at basin/national levels on the basis of existing as well as fresh assessments for KB;
4. To prepare reports based on such consultations to serve as a basis for country specific policies and strategies for rural development, food security, and environmental sustainability to take care of poverty and health issues in the background of World Bank's sector reviews;
5. To hold national level broad-based consultations in Egypt, Mexico and Pakistan;
6. To improve and refine PODIUM and IMPACT models for use initially in the two countries (India and China);
7. To encourage formulations of revised visions through National Committees of ICID;
8. To review ICID's present strategy and evolve future strategy in IWRDM; and
9. To hold high-level policy meetings with the Governments of participating National Committees and funding institutions for implementation of policy.

3. CPSP and Dialogue

While the ICID proposal was being considered, an international initiative sponsored by a **Consortium** of 10 Participating Organisations (POs) to run for 5 years was launched in August 2001 to conduct 'Dialogue on Water, Food and Environment'. As ICID deals with irrigated agriculture which was an important contributor to food security, ICID formally joined it in November 2001 after modifications were agreed for the documents of dialogue viz. 'Proposal' and 'Arrangements'. Besides, ICID the Consortium comprises FAO, GWP, IFAP, IUCN, IWMI, UNEP, WHO, WWC, and WWF. Out of these : FAO and IWMI, are working as Contributing Organisations (COs) in CPSP, besides 3 outsiders (please see box). The 'Dialogue' seeks to improve water resources management for **food security and environmental sustainability** with a special focus on reduction of poverty-hunger and improvement of human health.

The concept of holding consultation at various levels is included in both CPSP and the Dialogue. The coverage of subjects, the need for scientific assessments, the need for improvement of analytical tools such as PODIUM and IMPACT, the scope for involvement of National Governments, the funding agencies, the funding and stake-holder institutional mechanisms and more importantly, recognition of **criticality of integrated approach for the three sectors** in case of the CPSP is however different from the Dialogue. The Dialogue has a focus on the **bipolar water needs for 'food and environment'**. It does not aim to assess the critical role of 'water for people' sector, in its impact on environment. It aims at building bridges between the two sides of food and environment alone. The Consortium comprises organizations that primarily work on food and environment issues. The composition of COs for CPSP is different and addresses need for integration of all the three sectors. The CPSP hopes to arrive at interventions to facilitate implementation strategy for the ICID's NCs and concerned Governments over a limited period of 2 years in the first instance. The dialogue runs for 5 years and lays special stress on local actions besides building KB. The CPSP

- **CPSP Participating ICID National Committees (NCs)**

  CNCID (China); INCID (India); ENCID (Egypt); MXCID (Mexico); and PANCID (Pakistan).

- **CPSP Contributing Organizations (COs)**

- Food and Agriculture Organization (FAO)
- International Food Policy Resrearch Institute (IFPRI)
- International Program for Technology and Research in Irrigation and Drainage (IPTRID)
- International Water Management Institute (IWMI)
- The World Bank (WB)

- **Dialogue Participating Organizations (POs)**

- Food and Agriculture Organization (FAO)
- International Federation of Agricultural Producers (IFAP)
- Global Water Partnership (GWP)
- International Commission on Irrigation and Drainage (ICID)
- The World Conservation Union (IUCN)
- International Water Management Institute (IWMI)
- United Nations Environment Programme (UNEP)
- World Health Organization (WHO)
- World Water Council (WWC)
- World Water Forum (WWF)

relies on basin and national level consultations to be able to provide support to the country policies on macro scale. The Dialogue POs are expected to nominate their representatives for participation in CPSP's programme, wherever useful. The CPSP will be of shorter duration and is expected to be one of the major contributions of ICID to the Water Sector and the Dialogue both.

5. CPSP Components

The CPSP phase 1 activities will span two years viz. July 2002 to 31 May 2004 and initially concentrate on two countries, viz. China and India to be followed up later in Egypt, Mexico and Pakistan (Figure 1). The important components and approach proposed to be followed for their implementation are indicated in Figure 2.

Basically, the project steps / components comprise compilation of existing information on country policies, strategies and framework for irrigation-drainage-flood management, high level briefings and discussions in concerned Governments, formulation of fresh assessments on sample basis in selected basins, deployment of improved and integrated versions of PODIUM and IMPACT, reorientation workshop at IWMI, assembling an updated knowledge base (KB), identification of stakeholders, assembling them together for consultations on the basis of the KB initially in two countries followed by 3 countries for more general form of consultation, encouraging formulation of revised vision through NCs, briefing the concerned Governments about the outcome, holding discussions with capacity building and funding institutions, publishing and reporting to the ICID, COs, WWF3, WWF4 and the WWC, dissemination through websites of COs and International Water related Associations Liaison Committee (IWALC).

6. CPSP Knowledge Base (KB)

6.1 Existing KB in China and India

There exists a fairly detailed KB in both India and China about how best to implement the IWRDM on basin scale and about how to extrapolate it to national scale. National Policy on Water, Laws, Acts, Tribunals have laid down policies and practices. Consultations have been held at different

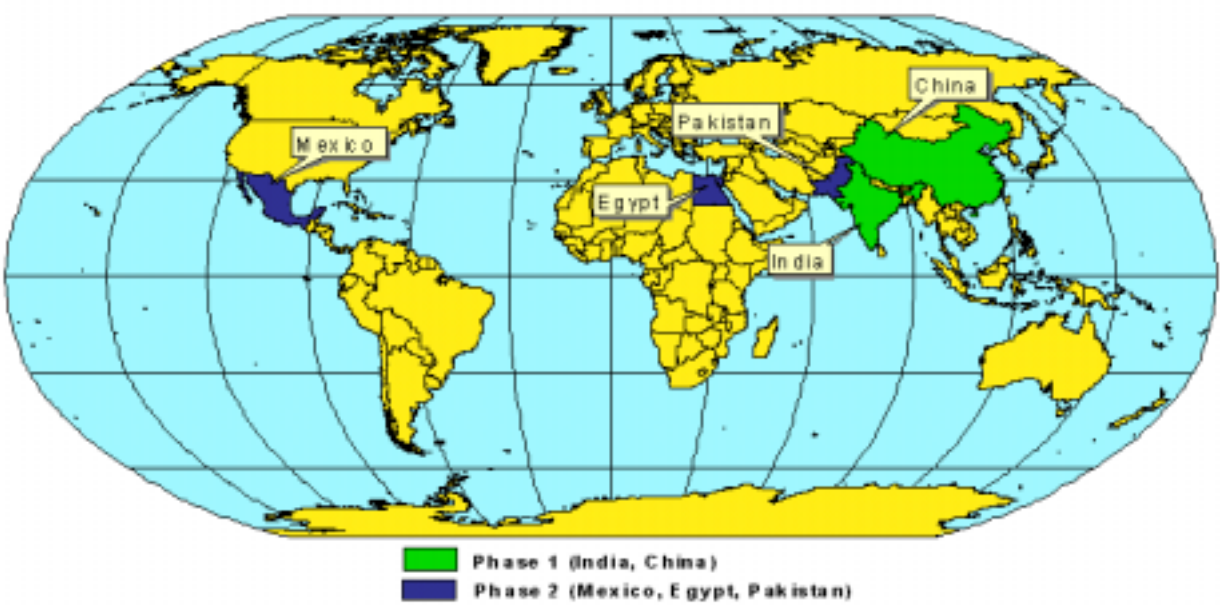


Figure 1. CPSP Participating Countries

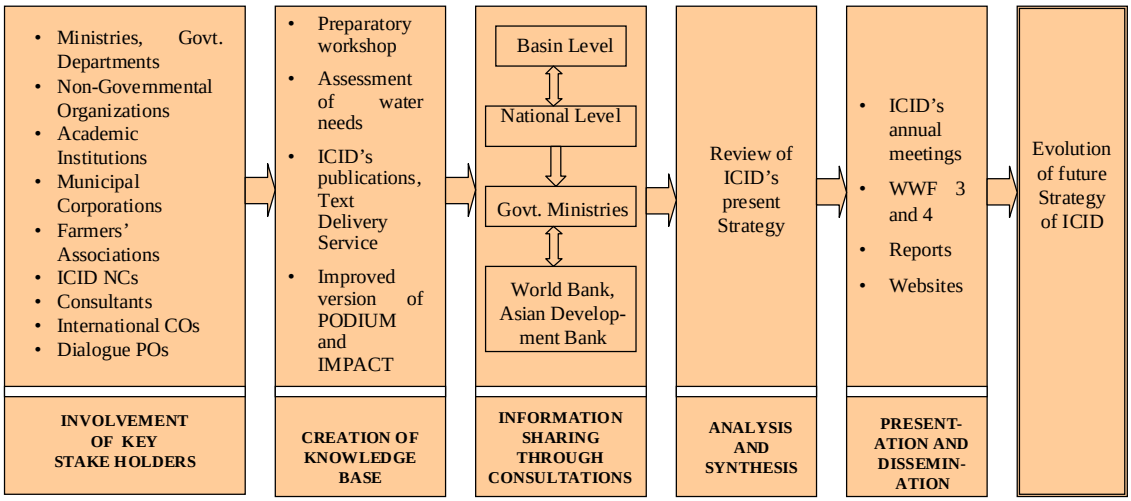


Figure 2. CPSP Content and Approach

points of time. National Commissions have been set up for reviewing the Water sector as a whole again and again. In particular, during the latter half of the 20th century, the socio-economic and environmental concerns have been incorporated into the national approaches in water sector. Both countries seemingly are moving in tandem in water and agriculture sector.

6.2 Similarities in the Two Countries of China and India

Both the countries have seen during the last 50 years, an unprecedented population growth alongside economic growth, urbanisation and industrialisation and socio-economic development. The latter has been uneven due to natural and sometimes political reasons. Both countries are fast emerging from being purely agrarian societies. Proportion of population engaged in

agriculture is dwindling, while productivity, value addition and diversification of agriculture is increasing. Most importantly, both have remained food self-sufficient in spite of phenomenal increase in population. Yet, the growth rate is declining and the population shows signs of stabilisation during the next 50 years, giving for these countries for the first time a planning option to overcome food insecurity once for all.

6.3 PODIUM and IMPACT

Although water availability is constrainted by basin boundaries, food production and its use is limited by only national boundaries. The model tools such as PODIUM and IMPACT have become available in recent past for providing planning flexibility for achieving food security. The IWMI and IFPRI will be improving these models with the help of the five countries for facilitating better assessments of policy options. Both countries have started deploying the modeling tools.

6.4 Intra-basin and Inter-Basin Balancing of Demands and Supplies

The increasing pace of urbanisation and industrialisation and its uneven spread in a basin however is causing a tremendous strain on water resources, resulting into its unbalanced and iniquitous deployment. Water availability for water deficit regions is mounting calling for inter-basin transfers. While the water needs for the food and people sectors keep growing, the pollutant load from point sources also is growing. Fortunately due to relatively low dose of fertilizers and pesticides use in agriculture of developing countries, pollution load due to non-point sources is relatively small. It is expected to grow fast with intensification of agriculture. At some places, upstream-downstream or surface-groundwater balance has been upset due to lack of basin approach in planning. While the competition between food and people sectors is mounting, little has been done to assess the need for nature sector. With the growth in awareness at local level, innovative ways have been attempted at integration of supply-demand sides without affecting the balance in the three sectors. The need for integration of supply as well as demand sides on a basin scale keeps intensifying. Although, adequate published grey KB is available on these aspects, **some basin wide illustrative assessments are necessary**. They will have to weave local experience which is not always adequately accounted for in basin scale.

6.5 Water Balance- Present, Past and Future

The CPSP plans to add such assessments for two sample river basins of medium size in each of the two countries. One of the basins is in a relatively water-rich area, whereas the other is in a water deficit region. In India two river basins viz. Brahmani (39,268 sq. km) on east coast and Sabarmati (21,674 sq. km) on the west coast, while in China two basins viz. Qiantangjiang (55,558 sq. km) and Jiaodong (20,008 sq. km) have been selected for water need assessments. Both assessments will indicate the range of problems being faced by the two countries and will enable nationwide projections on the basis of past record. The project aims to identify in a table study with some ground truthing present proportion of water use for the three sectors. The study also attempts a hindsight, say 50 years in past, to see what the proportion of water in the 3 sectors existed was at that point of time. As most of the water resource development that is seen today took place in the last 50 years, the comparison will be instructive in particular for the nature sector. The profound changes likely to take place in the next 50 years in the sectoral water use would indeed be considerable. They call for equal ingenuity in integrating the demands from finite water availability. The most important component to be assessed is that for ‘nature’. It has remained unassessed for long giving rise to conflict. **Water requirement for nature in past, present and future indeed will be the highpoint of the KB.**

Figure 3. Location of Selected River Basins in India

Figure 4. Location of Selected River Basins in China

6.6 Synergising the KB of all COs

ICID has its own KB, comprising 50 years of literature posted on its Text Delivery Service (TDS) which includes Congress proceedings, Work-body outputs, Seminars, Symposia, Workshops, various award winning contributions and so on. ICID's website has all this information. Besides, the COs have their own websites, archives, publications and databases. It is expected that the KB comprising all such information will help in conduct of purposeful consultations and dialogue amongst the stake-holders in the two countries to arrive at reasonable conclusions and recommendations on the merits of integrated approach for the WWF3 and WWF4.

7. High Level Policy Meetings with Governments of Participating National Committeess

While the KB is compiled and augmented, preliminary dialogue is set in motion initially with the Governments of the concerned States or Provinces and the Federal ones to apprise the policy makers about the aims and objectives of the CPSP and to contribute to the water policies and strategies of the countries based on the KB and the dialogues. The institutional mechanisms for

CPSP : Activity Schedule

Phase I (July 2002- September 2004)

Activity	2002						2003										2004								
	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S
Launch of CPSP																											
Preparatory Workshop																											
India																											
China																											
PODIUM Orientation Workshops by IWMI, in India																											
Launching of assessments in two sample river basins																											
India																											
China																											
Basin level consultations																											
India																											
China																											
Completion of first phase of assessments																											
India																											
China																											
Presentation at 3rd WWF, Kyoto, Japan																											
IWMI orientation workshop at Colombo																											
Orientation Workshop on PODIUMSim																											
National consultation																											
India																											
China																											
Briefing meetings with governments and funding agencies																											
India																											
China																											
Presentation of CPSP at 54th IEC, Montpellier																											
National consultations in Egypt, Mexico & Pakistan																											
Dissemination of results																											
Policy level meetings with governments																											
India																											
China																											
Report to 55th IEC, Russia																											

IEC - ICID's Annual International Executive Council meeting

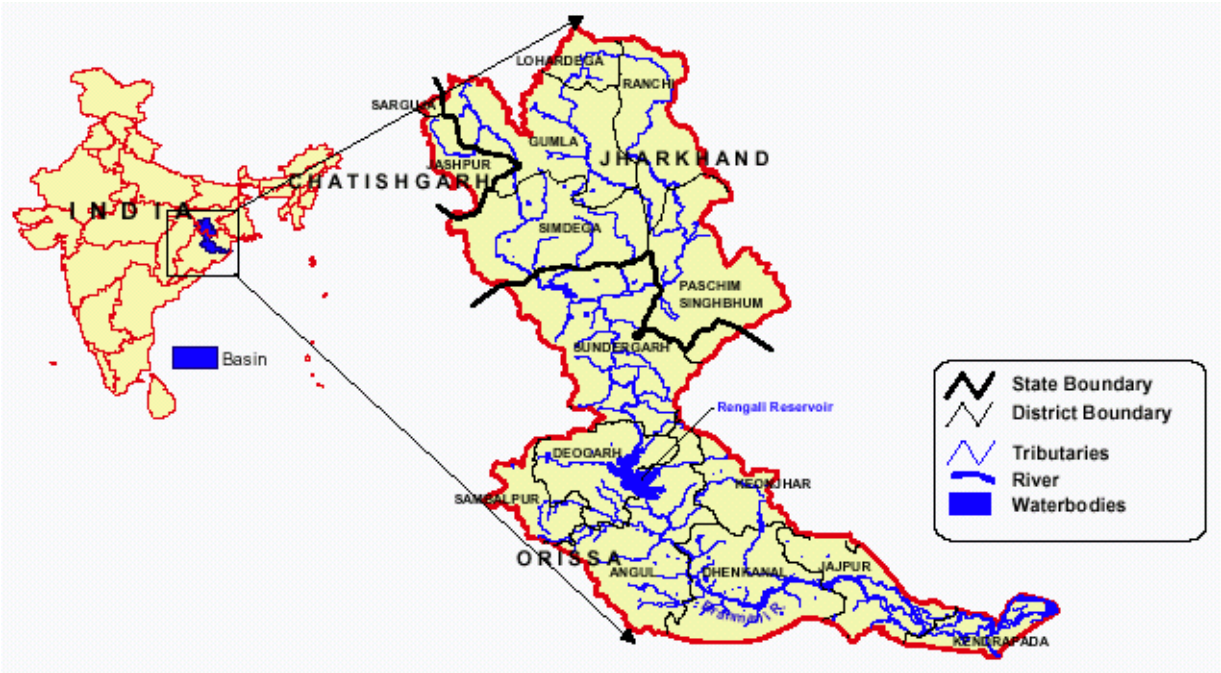
Activity completed Activity planned

Summary of assessments

Following is the summary of assessment for two sample basins as presented in the first phase of consultations:

Brahmani basin

The basin is rich in water resources and the per capita availability of fluvial fresh water in rivers and ground is at around 3077 m^3/year. The basin is also rich in minerals as also in forests, which occupy 37% of the basin area. Occurrence of floods, particularly in the deltas due to excessive precipitation is a common feature. On an average, annually a population of 0.6 million and crop production over 50,000 ha in the delta is affected. The Rengali storage has provided some relief in this regard, but has not eliminated the problem. Severe water shortages in spring and early summer also are common. The basin has a considerable potential for development of inland fisheries in reservoirs, ponds, tanks and canals. Irrigation development in the basin is not very large. Currently, a gross irrigated area is only about 0.36 Mha as compared to the gross cultivated area of 1.48 Mha. In particular, the upper area in the State of Jharkhand has little irrigation, and a



considerable potential for future development. Also presently, the irrigation is almost entirely from surface sources and the large ground water potential is untapped. The initial assessment of past, present & future water balances as shown in **Table 1** indicates that the requirement of water for food is likely to increase from 12% in the past or 23% in the present to 33% in future. Water for people would also become important due to expected large scale industrialisation & urbanisation. However, even with this increase, quantitatively the use would not be sizeable, but quality concerns would become important. The water available for nature is likely to reduce from an earlier figure of 88% or present figure of 76% to a future figure of 66%. There is a heavy concentration of mineral based industries in the Angul-Talcher region of the basin. The consequent pollution has caused water quality and ash disposal related concerns in the local Nandira stream, but not in the main river. Prompt corrective action by the industries, including adoption of a zero effluent policy by the Aluminium plant and its captive thermal plant has significantly improved the water quality. However, water quality concerns are still significant. While there will be no difficulty in maintaining the

forest evapo-transpiration, the flows to the sea would reduce from the past figure of around 26 billion m^3 or the present figure of 23 billion m^3 to about 19 billion m^3. Since the low flows would still be available both as hydropower draft from the Rengali Power House as also from return flows, this reduction of outflows is hardly a cause for concern. The Brahmani estuary supports, mangroves in the Bhitarkanika sanctuary. There has been a significant reduction in the mangrove area, but this seems to be due to occupation of the land by migrant population. However, the estuarian water quality and its effects on mangroves needs further studies. Also, additional scenarios to avoid possible waterlogging due to large returns to ground water are sought to be developed. These could include scenarios where the paddy area is reduced and crop diversification is practiced.

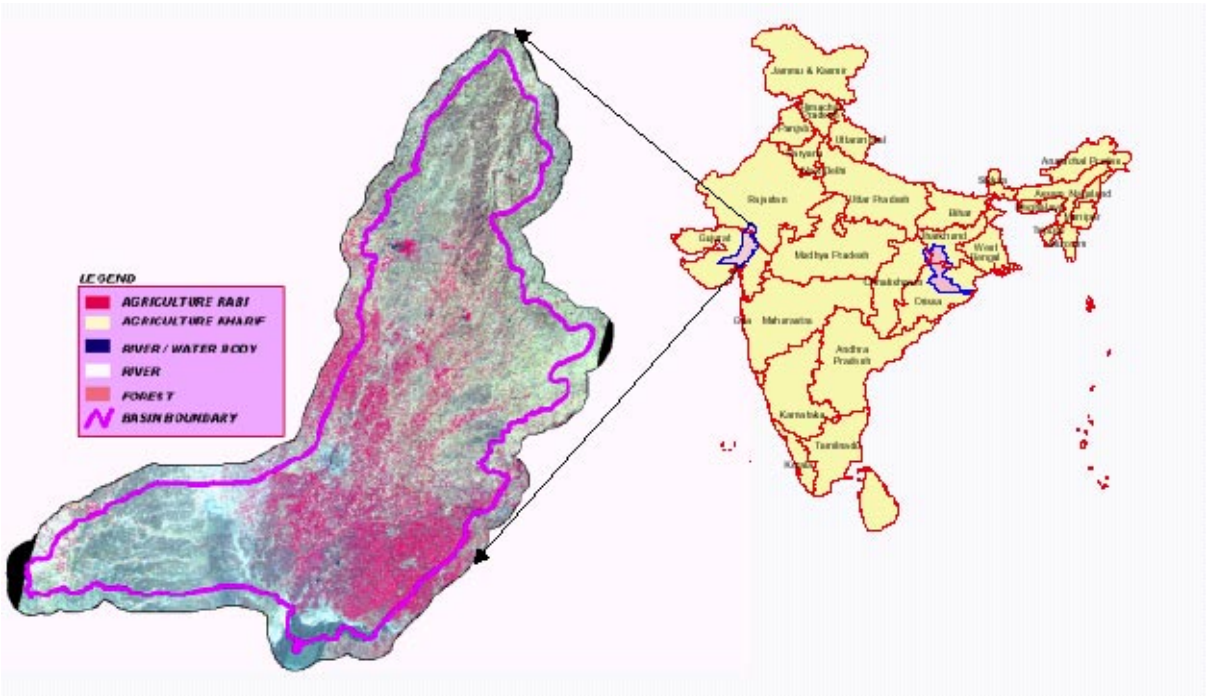
Table 1. Water Availability and Use/ Need Scenarios in Brahmani basin

(Million m^3)

Description	Past (1960)	Present (2000-01)	Future (2025)
Water available			
• Precipitation	53,011	53,011	53,011
• Net export	(-) 100	(-) 100	(-)1,080
• Return flows from irrigation, domestic/ municipal & industrial uses	550	3,928	9,943
Total available water	**53,461**	**56,839**	**61,874**
Water for food			
• ET from rainfed agriculture	5,670	6,956	5,224
• Rainfall used in irrigated agriculture	309	1,969	5,103
• Withdrawals for irrigated agriculture	416	4,049	10,297
Total for food	**6,395**	**12,974**	**20,624**
% of total available	***12***	***23***	***33***
Water for people			
• Withdrawals for domestic and municipal use	108	325	493
• Withdrawals for industrial use	115	322	1,282
Total for people	**223**	**647**	**1,775**
% of total available	***0.4***	***1***	***3***
Water for nature			
• Evapo-transpiration from forest	13,445	13,275	13,071
• Evapo-transpiration and evaporation from non-cultivated land	7,644	7,308	7,503
• Outflows to sea including low flows	25,754	22,635	18,901
Total for nature	**46,843**	**43,218**	**39,475**
% of total available	***87.6***	***76***	***64***
Total water for food, people and nature	**53,461**	**56,839**	**61,874**

Sabarmati basin

The basin is a water deficit basin having intensive agriculture and industrial development, and large population density. The natural fresh waters in the rivers and ground water indicate a per capita availability of 362 m^3/year. About 52% of the population lives in urban areas. At present, the basin has very large irrigation development. The current gross irrigated area is about 1 million ha out of the gross cropped area of 1.3 million ha. This large irrigated agriculture, in the face of water shortages has been possible through import of surface waters from the adjoining Mahi basin, as also by creating storages in the basin. Another significant facet of irrigated agriculture is that the major part of the irrigation is supported by ground water development which is based both on local overexploitation, as also on mopping up of the returns from irrigated agriculture including those through the Mahi waters. In the Sabarmati basin, the upper areas are



showing a significant over-exploitation of the ground water, whereas in the lower areas, where the imported water is being used, a ground water build up is seen. A separate water balance of these areas may be necessary to analyse this situation. The basin supports a comparatively small forest area, which is at 16% of the total basin area. The future scenario developed as "business as usual" is based on further import of waters from Mahi as also from the Narmada basin through the Sardar Sarovar Project. The initial assessment of water balances as worked is shown in **Table 2**. It can be seen that the water for food sector which was already consuming 44% of the total water in 1960, is consuming 53% of the water at present and may consume 56% of water in future. Water for people would vary from 2% to 5%, where as water for nature would reduce from 54% in 1960, or 44% at present to 39% in future. While the evapo-transpiration from the forest could be maintained at present level, the outflows to the sea seem to have reduced considerably from 3.7 billion m^3 from 1960 to 3.1 billion m^3 at present. In the future "business as usual" scenario this outflow could again increase to about 3.8 billion m^3 provided an additional net import of about 1.4 billion m^3 becomes possible. Even then the risk of increasing pollution due to the additional uses would have to be tackled by developing more appropriate future scenarios aimed at either improving ground water balance by reducing returns and withdrawals or based on lower imports and lower level of development.

Table 2. Water Availability and Use/ Need Scenarios in Sabarmati basin

(Million m³)

Description	Past (1960)	Present (2000-01)	Future (2025)
Water available			
• Precipitation	16,256	16,256	16,256
• Net import	Nil	1,371	2,716
• Return flows from irrigation, domestic/ municipal & industrial uses	569	3,301	5,215
Total available water	**16,825**	**20,928**	**24,187**
Water for food			
• Rainfed agriculture through evapo-transpiration	5,972	1,243	439
• Rainfall used in irrigated agriculture	642	4,285	4,645
• Withdrawals for irrigated agriculture	781	5,536	8,389
Total for food	**7,395**	**11,064**	**13,473**
% of total available	***44***	***53***	***56***
Water for people			
• Withdrawals for domestic and municipal use	236	598	1,038
• Withdrawals for industrial uses	27	106	260
Total for people	**263**	**704**	**1,298**
% of total available	***2***	***3***	***5***
Water for nature			
• Evapo-transpiration from forest	2,564	2,546	2,596
• Evapo-transpiration and evaporation from non-cultivated land	2,922	3,536	3,037
• Outflows to sea including low flows	3,681	3,078	3,783
Total for nature	**9,167**	**9,160**	**9,416**
% of total available	***54***	***44***	***39***
Total water for food, people and nature	**16,825**	**20,928**	**24,187**

Works to be carried out in future in the sample basins

The initial water assessments for the sample basins will further be refined and firmed up prior to the national level consultation, proposed to be held in July 2003. Attempts will be made to prepare assessments at sub-basin level, and at developing seasonal water balances both for normal and deficit years. Outputs of PODIUM and IMPACT-WATER will be incorporated in the assessments. For this purpose, some modifications in the PODIUM to couple it with a hydrologic model are being thought of. Additional future scenarios will be developed based on the projection in population growth and corresponding food requirement, and with the consideration of economic benefits and environmental constraints, in accordance with the basin-wise findings already discussed in para 5.3.1 and 5.3.2. Unfortunately, in absence of a methodology to carry assessment of water needs for eco-system, it has not been possible to project future water needs of eco-system.

Policy Interventions Suggested during the Consultations

The participants in the consultations were provided with the preliminary assessments in advance. The discussions therefore were very much focussed on the aim of the consultation, namely the status of IWRDM in past, present and the likely one in future. The integrated approach adopted for the first time for the three sectors was appreciated by them and they could see for themselves how to improve it. Also they could correctly understand the perceived or real conflicts, hotspots and signs of hope. On the whole, ICID's approach to the issues was vindicated and found logical and accommodative by proponents of all the three sectors. Refinement of the assessments during the next few months will no doubt be helpful for further narrowing of the differences.

Following are some of the conclusions and possible policy interventions as suggested by participants during the basin consultations:

- There is no conflict in availability for use, but there is lack of development to promote rational use for the three sectors.
- In these basins, which are much smaller in size as compared to the nation or even a state, self sufficiency in food grains may not be an important objective, and the use of water for irrigation of cash crops for increased agricultural income could be a viable alternative.
- Inadequate finance for sustenance and requisite development constitutes the main constraints.
- Take up and complete intra-basin and inter-basin development simultaneously.
- Continue emphasis on increase in water use efficiency, participatory irrigation management (PIM) and eventually irrigation management transfer (IMT).
- Evaluate goods and services provided by "Nature Sector".
- Aim at sustenance of nature sector at present level. With increase in water use efficiency, the sector will get increased share in water.
- Assess degradation of water quality due to municipal and industrial uses and agriculture.
- Instead of using the scarce water resources for dilution of pollutants, treat effluents to required standards in order to reduce pollution in rivers.
- Explore possibilities of using treated domestic effluents for irrigation without allowing these to flow to rivers before treatment. Such measures, coupled with augmentation of river flows by imported waters, can significantly improve water quality in the Sabarmati river in the lower portion. (To a significant extent, these partially treated effluents are already being used for irrigation in the Sabarmati basin, but mixing with river waters is also occurring).
- Closely monitor ground water quality and adopt policies, which would prevent its pollution.
- Explore possibilities of using the good quality imported Narmada waters for domestic use in the urban centres in the Sabarmati basin, thus allowing the basin surface water to be increasingly used for agriculture in upper areas.
- In wet basins like the Brahmani, implement policies that would encourage ground water exploitation for agriculture and thus maintain a better ground water balance to avoid waterlogging.
- Explore possibility of artificial recharge to ground water in exploited aquifers.
- Development of rainfed areas to achieve livelihood security and to control migration from rural areas.

- Although rainfed area will be relatively small in Sabarmati basin, it is necessary to develop a strategy to make it more productive so that livelihood of poor can be secured.
- A multipurpose mega-project comprising a 40 km long dyke-cum-dam across Gulf of Khambhat is presently under investigation. It will be a terminal reservoir for 3 major rivers of the region viz. Sabarmati, Mahi and Narmada, converting it into a freshwater storage. Irrigation, Tidal Power, Reclamation of saline lands, Drinking water supply and Ease in Transportation are some of the intended benefits. The ultimate study for Sabarmati basin will take a note of impacts of this project.