

**RIVER BASIN**

**BHIMA**

**[ INDIA ]**

**SCHEDULE A**  
**ASSESSMENT OF RIVER BASINS (RBs) IN SOUTH ASIA**

Sr. No.	Details	Response
<b>1</b>	<b>Physical Features - General Information</b>	
1.1	Name of River basin (also indicate regional names);	Bhima
1.2	Relief Map and Index Map of RB with Country/ State/ Province boundary marked to be attached.	Refer Annexure 1
1.3	Geographical location of the place of origin (Country/District.)	Bhimashanker in Junnar block, Pune District. Crestline fo the Western Ghats
1.4	Area (in Sq. Kms.),	4,863 Square Kilometres
1.5	Population (in Millions); Name of population centers/ Cites ( duely marked on the map: refer 1.2) having Population - (a) More than 0.5 Million - 1 Million	803597 Ahmednagar (Source: 2001 Census Report)
	(b) More than 1 Million – 10 Million	4195385 (Pune and Primpri Chinchwad) 1,225,825 ( Solapur) Source: Census Report 2001
	(c) More than 10 Million	

1.6	Approximate areas of upper regime, middle regime and lower regime;	Upper Bhima:1471kms ( 30%), Middle Bhima: 1743 sq kms: 35.87%, Lower Bhima:1648: 33.88% ( Source: Second Water and Irrigation Commission Report, Govt. of Maharashtra, 1991)
1.7	Country and States (Province) in which the basin lies (indicate % area covered);	The basin lies in Maharashtra ( 75%) and Karnataka ( 25%) ( Source: Aggregate estimates, Gomukh Trust, 2001)
<b>2</b>	<b>Hydrological and Land use Features:</b>	
2.1	Average annual rainfall (in mm);	736 mm. The rainfall varies from 2500 mm in the upper reaches, to 700 mm in the middle reaches and drops to 500 mm in the lower reaches( Source: Pune Meteorological Station)
2.2	Maximum-minimum temperatures in Degree Centigrade	Upper reaches( Bhimashanker) minimum temperature drops to 5-6 degrees Celsius, in the lower reaches, temperature rises upto 46 Degrees Celsius ( Solapur District) ( Source: Pun Meteorological Station)
2.3	Average annual yield (discharge) of water in Cubic Meter and the average yield for last past five years	7594 MCM in Upper Bhima ( upto Ujani Dam. Data recorded from 1980-1994) 1616 MCM in Seena Bori Benetura: (Data recorded form 1980 to 1994)
2.4	Major tributaries	Seena, Bori, Bentura, Ghod, Kukadi
2.5	Percentage shares of major water uses & Surface and groundwater abstraction in percentages- Convert into Table	Approximately 90%
	(a.) Agriculture,	D N A

	(b.) Industries,	0.83%
	(c). Domestic, ( urban+ rural+ livestock)	3.70%
	(d). environmental flows.	None allocated
2.6	Major cropping pattern	Food Grains : 75%, Sugarcane: 3%, Oilseeds: 11%, Cotton: 0.26%, Others: 11% ( Source: Agricultural Department, GOM and the Second Irrigation Commission Report, GOM, 1999)
2.7	Cultivable area under irrigation	156111.6 hectares ( 4.74% of the net cultivated area) ( Source: Second Water and Irrigation Commission Report, GOM, 1999)
2.8	Cultivable area not under irrigation	3295000 hectares ( Rain fed or irrigated through groundwater) ( Source: Second Water and Irrigation Commission Report, GOM, 1999)
2.9	State other Water Uses- e.g. Navigation, power, recreation etc.	Hydropower, Ecological use
<b>3</b>	<b>Ecosystem Features</b>	
3.1	Agro-climatic zones	
3.2	Major sub ecosystems (zoogeographical zones)	In the upper reaches, forest type is moist evergreen, but majority of the basin consists of dry, deciduous and scrub forests and grasslands
3.3	Major soil types	Upper Bhima: Mountain slope soils: 1% Shallow soils: 47%, Medium black soils: 19%, Deep black soils: 17%, Alluvial soils: 6%. Lower Bhima: Shallow soil: 24%, Medium Black Soil: 55, Deep Black Soil: 15%, Alluvial Soil: 06% : ( Source: Second Water and irrigation

		Commission Report, Govt. of Maharashtra, 1999)
3.4	National parks/sanctuaries, lakes, wetlands, etc.	Bhimashankar Wildlife sanctuary (District Pune), Rehekuri Blackbuck Sanctuary (Ahmednagar), Mauyreshwar Wildlife Sanctuary, Ujani Wetland 9 proposed
3.5	Brief information about the delta region of the basin (area, location, major urban centers in the delta, etc.)	The river does not form a delta, but meets the river Krishna in Karnataka State
<b>4</b>	<b>Water Quality</b>	
4.1	Prevailing water quality standards (e.g. Class I, II, III.etc, indicating permitted uses)	Class I ( at the origin till before Pune), Class IV in Pune nad Class III downstream ( Source: Personal discussion with Pune Municipal Corporation)
4.2	Stretches (along the River) in Kms. with water quality classes indicated (may be marked on the map)	Major urban centre Pune contributes to the maximum pollution in the river. Pune: Polluted stretch with BOD / COD reaching standards
4.3	Sources of Pollution, with data indicating quantum and/or severity.	Pune: Sewage: 560 MCM released untreated in the river systems ( Source: Environmental Status Report 2003-04)
4.4	Prevailing abatement techniques e.g: ETP, STP, legislation, etc.	ETPs have been established in Pune. But the collective capacity is to treat about 40% of the sewage generated
<b>5</b>	<b>Current status of the resource development &amp; potential for development</b>	

5.1	Water availability: a. Per capita water availability (in lpcd )	662.50 Litres per casita per day ( Source: Second Water and irrigation Commission Report, GOM, 1999)
	b. Per hectare water availability (in Cubic meters for cultivable command area):	5000 cubic meters/hectare of cultivated area ( Source: Second Water and irrigation commission Report: 1999, GOM)
	c. Availability of environmental flows (Current reserve, if any):	None
	d. Availability of ground water/ Average annual ground water abstraction/recharge.	Recharge: 4.715 billion cubic meters annually (13.16% of the total annual precipitation). There are a total of 13.63 % semi critical watersheds and 6.82% critical watersheds in the basin. ( Source: Groundwater Survey and Development Agency: Estimation of Groundwater Resources in Maharashtra 2003-04)
5.2	Structures: a. Major dams/barrages (with utilization categories):	Major: Upper Bhima: Pawana, Ghod, Tata (additionally, 7 projects are on going) Downstream of Ujani Dam: Neera, Bhatghar,
	b. Proposed dams:	Dams Under construction: Ujani , Deoghar, etc
	c. Live storage of major dams:	2528 MCM ( Source: Second Water and irrigation commission Report: 1999, GOM)
	d. Live storage through proposed dams:	
	e. Inter basin transfer systems:	There was a plan for transferring water from the Neera River to the Bhima, it has not yet been operationalised
	f. Any Other:	
5.3	Command area of major dams	

5.4	<p>Agencies functioning in the basins:</p> <p>a. Public agencies/ CSOs which construct/ implement the infrastructures projects:</p> <p>b. Private agencies/ CSOs involved in infrastructure development</p>	<p>Irrigation Development Corporation of the Government of Maharashtra, Maharashtra Krishna Vikas Development Council.( slated River Basin Council for Krishna basin), CWPRS ( Central Water and Power Research Station), NWA ( National Water Academy: Training and Capacity building centre for Irrigation Engineers). City Municipal Corporations and Panchayats</p> <p>Private Agencies : Tata hydropower: Involved in generating hydropower on the Bhima basin at Mulshi. Various NGOs like Gomukh Trust, AFARM, Council of Equitable Water Rights, Soppecom, etc.</p>
6	<p>Existence of National/State/Provincial Laws or Notifications relating to water- Management / use/development/opportunity for private sector participation or for privatization of water resources</p>	<p>Bhima is a tributary of the River Krishna. Krishna is an interstate river flowing through Maharashtra, Karnataka and Andhra Pradesh. Water allocation of Krishna is governed by the Krishna River Disputes Tribunal.</p> <p>Private Sector Participation and Privatization:</p>

7	Key Issues:	<p>Equity is the major concern for the basin. Despite a considerable investment in large dams, barely 4.74% of the cultivable area is irrigated through dams and canals, sugarcane is planted on 3% area and consumes 22% of the available resources. Tankers are used to supply water in rural areas in summer months, while urban centers like Pune have a huge water availability at 265 lpcd.</p> <p>Water Pollution is another crucial issue for the basin. Pune barely treats 30% of its sewage and effluents flow in the Bhima river every day. Environmental sustainability is also an important issue for the basin. In the absence of environmental flows, the number of fish species and migratory birds have been declining. Ground Water exploitation though over draft is critical issue.</p>
8	Enabling instruments- Law/ Policy/ Economic & Financial Measures for introducing IWRM in the basin	<p>The Maharashtra Water Resources Regulatory Authority Act ( 2005) is an effort towards IRBM. Through the Act, river basins are formally accepted as planning units. Under the act, Bhima River would come under the Krishna River Basin Council which would manage water allocations, water pricing, etc for the river. Though this is limited to Maharashtra state boundaries only.</p>



**SCHEDULE B**  
**ASSESSMENT OF RIVER BASINS (RBs) IN SOUTH ASIA**

Sr. No.	Details	Response
<b>1</b>	<b>Legal / Political Mandate</b>	
1.1	Is there any RBO? If yes, Give Name.	Maharashtra Krishna Valley Development Corporation [MKVDC] acts like an RBO for Krishna (of which Bhima is a sub basin)
1.2	How has it been constituted? (Statutory/ Voluntary/ Any other form).	Krishna River Council has been constituted statutorily under the MWRRA.
1.3	State objectives and organizational structure of the RBO in outline & enclose brochures	
1.4	Functioning level of the RBO	
1.5	What are the major activities carried out by the RBO since inception?	
1.6	What are the proposed activities of the RBO?	
1.7	Details of Contact person/s (Name, designation and contact numbers, address, & emails).	

1.8	Presence of a regulatory framework wherein national or regional supra basin authority regulates the functioning of the RBO	Maharashtra Water Resource Regulatory Authority [MWRRA]
1.9	Legal/political mandate wherein stakeholders can appeal for redress/decision and conflict resolution	
1.10	Does the RBO have an appellate authority?	
1.11	Is the RBO an autonomous body?	
1.12	Is it regulated by a supra basin authority, if so, how?	
1.13	Is the RBO authorized to raise capital for management and/or implementation in open market?	
1.14	Does the RBO receive direct budgetary grants? (From Govt./ Statutory Bodies/ Public donations/ Any Other Agencies.)	
1.15	Nature of mandate for delegation of powers and/or functions (within RBO's constitution) to the lowest possible scales so as to encourage stakeholder participation. (Kindly elaborate the mode of delegation).	
1.16	Policy of the RBO on – (i) Water allocation between users/sectors/sub-basins; and (ii) Procedures and processes for determining the above.	

	(Kindly elaborate upon the above).	
1.17	Presence of Trans-boundary Water Agreement or Treaty in case of a trans-boundary basin	
1.18	Presence of a 'Tribunal' appointed in case of intra basin or inter basin disputes	
1.19	Is the RBO responsible for preparing Basin Management Plan. If yes, please enclose a copy	
<b>2</b>	<b>Processes of community/stakeholder participation in the functioning of the RBO</b>	
2.1	Are the stakeholders from the basin included in the governing body of the RBO?	
2.2	Elaborate the nature and frequency of public consultation initiated by the RBO	
2.3	Elaborate efforts at outreach/communication by the RBO.	
2.4	Elaborate efforts made for creation of participatory platforms at minor/major tributary or watershed levels for encouraging participation .	
2.5	Interaction of the RBO with organizations working in water management at different watershed/ micro basin, sub-basin or basin level	
2.6	Stakeholder participation sought by the RBO for preparing Basin Management Plan	
<b>3</b>	<b>Conflict resolution and negotiations</b>	
3.1	Involvement of the RBO in negotiations between stakeholders at various levels through an appellate	

	authority mentioned above;	
3.2	Negotiation and participation encouraged at mini/micro basins for consensus building and/or conflict management.	

**SCHEDULE C [1]**  
**ASSESSMENT OF RIVER BASINS (RBs) IN SOUTH ASIA**

**Civil Society RBOs : Gomukh Environmental Trust for Sustainable Development**

Sr. No.	Details	Response
1.1	Constitution of the organization in terms of involvement of local action groups/initiatives, stakeholders, water users groups, and irrigation groups/ committees, traditional water groups urban and industrial users etc. are a part of the organization);	Gomukh Environmental Trust has initiated a multi-stakeholder process for managing the Bhima River Basin. The forum involves farmers, industrialists, citizens, academics, CSOs, etc.
1.2	Reflection of basin perspective in the organization's constitution/past/planned work and activities?	Gomukh Trust has been working on a micro-catchment of the Bhima basin for the past nine years. Watershed Management and rural development efforts in the micro-catchment (Kolwan Valley, 8000 hectares) have evolved with a catchment view. These efforts have been upscaled to the scale of Bhima Basin. For the past three years, Bhima Multi-stakeholder Conferences have been organised to create a dynamic platform for negotiations between the stakeholders. A Basin Management plan for Bhima is ready
1.3	Scale of work: Sub-basin/basin scale?	Sub basin scale ( Bhima sub basin)

1.4	Consideration of upstream and downstream impacts of water management activities in the RB and issues like inequitable distribution of water between intra and inter sectors;	Gomukh has been working on equitable water distribution in the river basin for the past ten years. Though the formation of watershed committees and water user groups in the bhima basin, constructive dialogue between water users from the upstream and down has been initiated
1.5	Has the organization prepared a Basin Master( Management) Plan? Does it contain elements different from or alternative to that of the government organizations?	Basin Management Plan has been prepared for Bhima. The plan integrates various government schemes relevant to water management in the basin and suggests alternatives for a more equitable and sustainable water management for Bhima Basin
1.6	Efforts taken by the Civil Society RBO to upscale the vision/activities at basin level	Gomukh Trust has initiated work on a micro-catchment scale of around 8000 hectares and 16 villages. The effort has been upscaled to include nearly 60 villages of the basin. Bhima Multi-stakeholder conferences have been organised to create a multi-stakeholder platform for negotiations and trade offs
1.7	Participation in lobbying and advocacy at appropriate levels (provincial, national, international)	Gomukh Trust is a member of Council for Equitable Water Rights - a forum of NGOs working on Lobbying & Advocacy. Along with the Council for Equitable Water Rights. Efforts for negotiated IRBM have been initiated at the local, national and international levels.

**SCHEDULE C [ 2 ]**

## ASSESSMENT OF RIVER BASINS (RBs) IN SOUTH ASIA

### Civil Society RBOs : Upper Bhima Water Partnership

Sr. No.	Details	Response
1.1	Constitution of the organization in terms of involvement of local action groups/initiatives, stakeholders, water users groups, and irrigation groups/ committees, traditional water groups urban and industrial users etc. are a part of the organization);	Upper Bhima Water Partnership is an informal organisation for encouraging IRBM in the Upper Bhima Sub basin. The Partnership consists of various government departments, CSOs, academics, etc involved in water management in the basin.
1.2	Reflection of basin perspective in the organization's constitution/past/planned work and activities?	UPWP has been explicitly initiated for encouraging IRBM through a participatory approach
1.3	Scale of work: Sub-basin/basin scale?	Sub basin of Bhima ( from origin to the Ujani Dam)
1.4	Consideration of upstream and downstream impacts of water management activities in the RB and issues like inequitable distribution of water between intra and inter sectors;	Stakeholders from upstream and downstream are a part of the negotiating process
1.5	Has the organization prepared a Basin Master Plan? Does it contain elements different from or alternative to that of the government organizations?	UPWP has prepared a Vision Statement for Upper Bhima that provides a direction for IRBM in the basin
1.6	Efforts taken by the Civil Society RBO to upscale the vision/activities at basin level	UBWP works specifically in the Upper Bhima Basin

1.7	Participation in lobbying and advocacy at appropriate levels (provincial, national, international)	
-----	--	--