

**RIVER BASIN**

**BHADAR**

**[ INDIA ]**

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

<b>Sr. No .</b>	<b>Details</b>	<b>Response</b>
<b>1</b>	<b>Physical Features - General Information</b>	
1.1	Name of River basin (also indicate regional names);	Bhadar
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.)	The river originates near Jasdan and flows towards west about 185 km to meet the Arabian Sea near Navibandar, (source- <a href="http://www.ias.ac.in/currsci/apr252003/1065.pdf">http://www.ias.ac.in/currsci/apr252003/1065.pdf</a> )
1.4	Area (in Sq. Kms.),	4143.75 km <sup>2</sup> (Source- ibid)
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	Dhoraji-- population 125.000 (2001)(Source- <a href="http://en.wikipedia.org/wiki/Dhoraji">http://en.wikipedia.org/wiki/Dhoraji</a> )
	(b) More than 1 Million – 10 Million	
	(c) More than 10 Million	

1.6	Approximate areas of upper regime, middle regime and lower regime;	
1.7	Country and States (Province) in which the basin lies (indicate % area covered);	
<b>2</b>	<b>Hydrological and Land use Features:</b>	
2.1	Average annual rainfall (in mm);	625-750 mm (Source- <a href="http://agri.gujarat.gov.in/informations/agro-climatic-6.htm">http://agri.gujarat.gov.in/informations/agro-climatic-6.htm</a> )
2.2	Maximum-minimum temperatures in Degree Centigrade	maximum temperature is 39.9 C, minimum temperature is about 12.5 C.(Source- <a href="http://agri.gujarat.gov.in/informations/state_agri_profile.htm">http://agri.gujarat.gov.in/informations/state_agri_profile.htm</a> )
2.3	Average annual yield (discharge) of water in Cubic Meter and the average yield for last past five years	
2.4	Major tributaries	Vinu, Moj, Phophal, Champavadi, Gondli, Karmali, Vasvari, Survo and Galoliya.(source- <a href="http://www.ias.ac.in/currsci/apr252003/1065.pdf">http://www.ias.ac.in/currsci/apr252003/1065.pdf</a> )
2.5	Percentage shares of major water uses & Surface and groundwater abstraction in percentages for Agriculture, Industries, Domestic, Urban & Environmental flows	5660m <sup>3</sup> /sec.(Source- <a href="http://guj-nwrws.gujarat.gov.in/english/bhadar.htm">http://guj-nwrws.gujarat.gov.in/english/bhadar.htm</a> )

2.6	Major cropping pattern	Cotton, peanut, sugar cane, corn, vegetables etc. Back in days there were lot of sugar factories (sugar mills) were located on national highway 8B between Dhoraji and Upleta. (Source- <a href="http://en.wikipedia.org/wiki/Dhoraji">http://en.wikipedia.org/wiki/Dhoraji</a> )Groundnut Cotton & Pulses Wheat, Bajra, Jowar, & Sugarcane. (Source- <a href="http://agri.gujarat.gov.in/informations/agro-climatic-6.htm">http://agri.gujarat.gov.in/informations/agro-climatic-6.htm</a> )
2.7	Cultivable area under irrigation	26587ha(Source- <a href="http://guj-nwrws.gujarat.gov.in/english/bhadar.htm">http://guj-nwrws.gujarat.gov.in/english/bhadar.htm</a> )
2.8	Cultivable area not under irrigation	
2.9	State other Water Uses- eg. Navigation, power, recreation etc.	D N A
<b>3</b>	<b>Ecosystem Features</b>	
3.1	Agro-climatic zones	Zone- 13, Gujarat Plains and Hills Region: Gujrat(Source- <a href="http://www.krishisewa.com/krishi/Azone.html">http://www.krishisewa.com/krishi/Azone.html</a> )
3.2	Major sub ecosystems (zoogeographical zones)	
3.3	Major soil types	light brown to yellowish brown in colour, and also shows a few degrees of fine to medium size mottling with faint contrast <sup>7</sup> . The soil peds are fine granular to blocky. It is calcareous in nature. (source- <a href="http://www.ias.ac.in/currsci/apr252003/1065.pdf">http://www.ias.ac.in/currsci/apr252003/1065.pdf</a> )

3.4	National parks/sanctuaries, lakes, wetlands, etc.	Gir National Park, Black Buck National Park, Vansda National Park, Marine National Park (Source- <a href="http://www.krishnaheart.org/Wildlife.htm">http://www.krishnaheart.org/Wildlife.htm</a> )
3.5	Brief information about the delta region of the basin (area, location, major urban centers in the delta, etc.)	The clear influence of marine flooding in the river valleys is recorded in the form of bioclastic carbonate sand-dominated units that contain biogenic structures and associated tidal clays. Punctuation in the fluvial sequences in the form of pedogenesis, erosion and marine flooding provide clues for changes in regional climate and sea level. The maximum elevation of the marine flooding clusters around 10–15 m. Acheulian tools and radiometric dates of the associated miliolite limestone indicate that the marine flooding in these river valleys is possibly linked to the marine oxygen isotope stage five (source- <a href="http://www.ias.ac.in/currsci/apr252003/1065.pdf">http://www.ias.ac.in/currsci/apr252003/1065.pdf</a> )
<b>4</b>	<b>Water Quality</b>	
4.1	Prevailing water quality standards (e.g. Class I, II, III.etc, indicating permitted uses)	
4.2	Stretches (along the River) in Kms. with water quality classes indicated (may be marked on map)	
4.3	Sources of Pollution, with data indicating quantum and/or severity.	
4.4	Prevailing abatement techniques e.g: ETP, STP, legislation,etc.	

<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 )	
	b. Per hectare water availability (in Cubic meters for cultivable command area):	
	c. Availability of environmental flows (Current reserve, if any):	
	d. Availability of ground water/ Average annual ground water abstraction/recharge.	
5.2	Structures: a. Major dams/barrages (with utilization categories):	Bhader 1. Irrigation and water supply (Source- <a href="http://guj-nwrws.gujarat.gov.in/english/bhadar.htm">http://guj-nwrws.gujarat.gov.in/english/bhadar.htm</a> )- Bhadar 2. (Source- <a href="http://en.wikipedia.org/wiki/Dhoraji">http://en.wikipedia.org/wiki/Dhoraji</a> )
	b. Proposed dams:	
	c. Live storage of major dams:	299.28mm3 (Source- <a href="http://guj-nwrws.gujarat.gov.in/english/bhadar.htm">http://guj-nwrws.gujarat.gov.in/english/bhadar.htm</a> )
	d. Live storage through proposed dams:	
	e. Inter basin transfer systems:	the Sujlam Suflam Project nearing completion will shortly provide linkage of the river Mahi to Bhadar(Source- <a href="http://www.agri.gujarat.gov.in/download/t_draft_speech_ndc290507.pdf">http://www.agri.gujarat.gov.in/download/t_draft_speech_ndc290507.pdf</a> )
	f. Any Other:	Data not avialable
5.3	Command area of major dams	36842Ha.(Source- <a href="http://guj-nwrws.gujarat.gov.in/english/bhadar.htm">http://guj-nwrws.gujarat.gov.in/english/bhadar.htm</a> )

5.4	Agencies functioning in the basins: a. Public agencies/ CSOs which construct/ implement the infrastructures projects: b. Private agencies/ CSOs involved in infrastructure development	Gujarat Irrigation Department, Water Users Associations of Gujarat, Narmada Control Authority, Watershed Development Authority of Gujarat, Farmers Associations.
6	Existence of National/State/Provincial Laws or Notifications relating to water-Management / use/development/opportunity for private sector participation or for privatisation of water resources	The Gujarat Water Users' Participatory Irrigation Management Bill-2007(Source- <a href="http://www.agri.gujarat.gov.in/download/t_draft_speech_ndc290507.pdf">http://www.agri.gujarat.gov.in/download/t_draft_speech_ndc290507.pdf</a> )

7	Key Issues:	<p>1-Water Pollution, Major pollution is due to Jetpur cotton industries. There are many production units located in Jetpur. Jetpur is located 25 kms. on upstream of Bhadar river. Polluted water from Jetpur cotton industries is directly thrown in Bhadar river without treatment and it pollutes Bhadar river up to great extent.(Source-  <a href="http://en.wikipedia.org/wiki/Dhoraji">http://en.wikipedia.org/wiki/Dhoraji</a>)</p> <p>2-Excessive fluoride in ground water is already a major problem in large parts of Saurashtra and North Gujarat (Source-<a href="http://gec.gov.in/ged6.htm">http://gec.gov.in/ged6.htm</a>)</p> <p>3- River Bhadar, Gujarat (Katariya, 1998). 1,200 sari dyeing and printing units in Jetpur.</p> <p>When public protests proved ineffective, the people of downstream town Dhoraji filed a Public Interest Litigation (PIL). After 14 years, the Gujarat High Court ordered the closure of Jetpur units until effluent treatment plants were installed. But still little has happened. (Source-  <a href="http://lequia.udg.es/lequianet/WatSciTech/04508/0047/045080047.pdf">http://lequia.udg.es/lequianet/WatSciTech/04508/0047/045080047.pdf</a>)</p>
8	Enabling instruments- Law/ Policy/ Economic & Financial Measures for introducing IWRM in the basin	Gujarat Irrigation Department, Water Users Associations of Gujarat, Narmada Control Authority, Watershed Development Authority of Gujarat, Farmers Associations.



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

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

**Civil Society RBOs**

( CSOs working in River Basin issues or those physically involved in infrastructure development and articulating / advocating a River Basin perspective maybe be considered as Civil Society RBO. Please note that some of these organisation may not be calling themselves as RBOs. This is despite the fact that they function in most, if not all areas in which a statutorily constituted RBO operates)

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);	Swarajya Deep and Vikas Centre for Development (Source- <a href="http://gec.gov.in/NEAF%5Ctable_on_projects.htm">http://gec.gov.in/NEAF%5Ctable_on_projects.htm</a> )
1.2	Reflection of basin perspective in the organization's constitution/past/planned work and activities?	

1.3	Scale of work: Sub-basin/basin scale?	
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;	
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?	
1.6	Efforts taken by the Civil Society RBO to upscale the vision/activities at basin level	
1.7	Participation in lobbying and advocacy at appropriate levels (provincial, national, international)	