RIVER BASIN

SABARMATI

[INDIA]

SCHEDULE A
ASSESSMENT OF RIVER BASINS ORGANISATIONS (RBOs) IN SOUTH ASIA

Sr. No.	Details	Response
1	**Physical Features - General Information**	
1.1	Name of River basin (also indicate regional names)	Sabarmati
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))	Sabarmati river rises from Aravalli bills in Rajasthan at an elevation of about 762 m and flows for about 371 km before meeting the Arabian Sea through the Gulf of Cambay. (Source: Water Resource Ministry, Government of India Data. http://wrmin.nic.in/riverbasin/sabarmati.htm)
1.4	Area (in Sq. Kms.),	Sabarmati Basin extends over an area of 21,674 km2 which is nearly o.7% of total geographical area of the country. (Source: Water Resource Ministry, Government of India Data. http://wrmin.nic.in/riverbasin/sabarmati.htm)
1.5	Population (in Millions); Name of population centers/ Cites (duly marked on the map: refer 1.2) having Population -	

	(a) More than 0.5 Million - 1 Million	
	(b) More than 1 Million – 10 Million	
	(c) More than 10 Million	In Gujarat: The basin is densely populated covering nearly 43% of the basin population in urban areas and the population as per 1991 census in Gujarat State is 9.285 million (source: source:http://www.oieau.fr/ciedd/contributions/atriob/contribution/parmar.htm) The total population in the basin (2001) is 11.75 million, of which 5.99 million is urban and 5.76 million is rural. The projected population of the basin for the year 2025 is 19.86 million, of which 10.81 million is urban and 9.05 million is rural. (Source:OECD WORKSHOP ON AGRICULTURE AND WATER: SUSTAINABILITY, MARKETS AND POLICIES)
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);	0.4 Mha lies within Rajasthan (Source: Rajasthan Irrigation Department http://www.rajirrigation.gov.in/3bsabarmati.htm) 4124 Sq.km. lies in Rajasthan State and the remaining 18550 sq. km. in Gujarat State. (Source: http://www.oieau.fr/ciedd/contributions/atriob/contribution/parmar.htm)
2	**Hydrological and Land use Features:**	

2.1	Average annual rainfall (in mm);	The annual mean rainfall over the Sabarmati Basin was computed as 575 mm, of which about 96% falls during the four Monsoon months (June-September). (Source: Rajasthan irrigation Department http://www.rajirrigation.gov.in/3bsabarmati.htm)
2.2	Maximum-minimum temperatures in Degree Centigrade	Temperatures reaching 45 degrees celsius in Rajasthan region
2.3	Average annual yield (discharge) of water in Cubic Meter and the average yield for last past five years	An average annual surface water potential of 3.8 km3 has been assessed in this basin. Out of this, 1.9 km3 is utilisable water (Source: Water Resource Ministry, Government of India Data. http://wrmin.nic.in/riverbasin/sabarmati.htm)
2.4	Major tributaries	The principal tributaries of Sabarmati are the Sei, the Wakal, the Harnav, the Hathmathi and the Wartak. The main tributaries of the Sabarmati river are Wakal river and the Sei Nadi, which also rise in the Aravali hill range west of Udaipur city and flow south-westwards in courses generally parallel to the Sabarmati river, up to their confluence with the river (in Gujarat).(Source: Water Resource Ministry, Government of India Data. http://wrmin.nic.in/riverbasin/sabarmati.htm)
2.5	Percentage shares of major water uses & Surface and groundwater abstraction in percentages-Convert intoTable (a.) Agriculture,	Water consumption of surface water for irrigation has been estimated to be 3,465 million m^3 per year including Mahi command within the Sabarmati basin (1,663 million m^3).
	(b.) Industries,	Water requirement for the existing 20 industrial estates in the basin is 99.64 million m^3 and the demand is likely to be

		245 million m^3 in 2025.
	(c). Domestic,	
	e). environmental flows.	No environmental flows have been alocated , but the Sabarmati Riverfront Development Project entails flows from the Narmada canal to Sabarmati for aesthetic reasons.
2.6	Major cropping pattern	Data not found.
2.7	Cultivable area under irrigation	Culturable area in the basin is about 1.6 Million ha, which is 0.8% of the total culturable area of the country.(Source: Water Resource Ministry, Government of India Data. http:// wrmin.nic.in/riverbasin/sabarmati.htm) Average Irrigated area in Rjasthan:0.03 Mha (Source: Rajasthan irrigation Department http://www.rajirrigation.gov.in/3bsabarmati.htm) The NCIWRD (1999) projects that the present gross irrigated area of 86000 ha.can ultimately be increased to 450,000 ha.
2.8	Cultivable area not under irrigation	
2.9	State other Water Uses- eg. Navigation, power, recreation etc.	Sabarmati Riverfront Development Project is an ambitioius project initiated in Ahmedabad. The main aim is beautification of the riverside area for economic development. Note: For details, please refer to :http://www.sabarmatiriverfront.com/
3	**Ecosystem Features**	
3.1	Agro-climatic zones	D N A
3.2	Major sub ecosystems (zoogeographical zones)	D N A

3.3	Major soil types	The important soil types found in the basin are black, alluvial and sandy soils.(Source: Water Resource Ministry, Government of India Data. http://wrmin.nic.in/riverbasin/sabarmati.htm)
3.4	National parks/sanctuaries, lakes, wetlands, etc.	Velavadhar National Park: BlackBuck Sanctuary dominated by scrub forests, Nal Sarovar Bird Sanctuary near Ahmedabad,
3.5	Brief information about the delta region of the basin (area, location, major urban centers in the delta, etc.)	Sabarmati river flows into the Gulf of Cambay , indenting northward the coast of Gujarat state, western India, between Bombay and the Kathiawar Peninsula. It is 120 miles (190 km) wide at its mouth between Diu and Daman, but it rapidly narrows to 15 miles (24 km). The gulf receives many rivers, including the Sabarmati, Mahi, Narmada (Narbada), and Tapti (Osurce:Encyclo[aedia Britannica http://www.britannica.com/eb/article-9018758/Gulf-of-Cambay). Siltation rate of Sabrmati Delta is high. sabarmati carries a huge pollution load to the Gulf of Cambay. Pollution of the Gulf due to increasing effluents and decreasing freshwater outflows is an area of concern. (source: http://timesofindia.indiatimes.com/cms.dll/articleshow?catkey=-2128821153&art_id=1760874482&sType=1)
4	**Water Quality**	
4.1	Prevailing water quality standards (e.g. Class I, II, III.etc, indicating permitted uses)	Refer to Annex attached
4.2	Stretches (along the River) in Kms. with water quality classes indicated (may be marked on	

	the map)	
4.3	Sources of Pollution, with data indicating quantum and/or severity.	
4.4	Prevailing abatement techniques e.g: ETP, STP, legislation,etc.	
5	Current status of the resource development & potential for development	
5.1	Water availability: a. Per capita water availability (in lpcd)	The average water in the availability in the Sabarmati basin is 360 m^3 per capita which is the lowest in India (1991 census) Source: Sustainable Development of the Sabarmati Basin: B.J. PARMAR - O.T. GULATI, http://www.oieau.fr/ciedd/contributions/atriob/contribution/parmar.htm)
	b. Per hectare water availability (in Cubic meters for cultivable command area):	Similarly, the average annual water availability per ha of culturable area is 2455m3 which is second lowest in India. (Source: Sustainable Development of the Sabarmati Basin: B.J. PARMAR - O.T. GULATI, http://www.oieau.fr/ciedd/contributions/atriob/contribution/parmar.htm)
	c. Availability of environmental flows (Current reserve, if any):	No current reserve. Waters from Narmada canal are diverted to Ahmedabad to maintain a constant water body for the Sabramati Riverfront Development Project
	d. Availability of ground water/ Average annual ground water abstraction/recharge.	Total Ground Water Recharge: 133 Mm3 - Utilised 38 Mm3/ yr in Rajasthan (source: Rajasthan irrigation Department http://www.rajirrigation.gov.in/3bsabarmati.htm) in Gujarat:Utilizable recharge (85% if gross recharge)=

		2095.70 cuM/year. Gross groundwater drfat in Gujarat: 2436.66 CuM/year(sOurce:http://www.oieau.fr/ciedd/contributions/atriob/contribution/parmar.htm)
5.2	Structures: a. Major dams/barrages (with utilization categories):	In Rajasthan: There are only 47 Minor irrigation projects in the Sabarmati River basin, as well as some small irrigation systems (covering less than 20 ha) constructed and operated by Panchayat Samities (PS).(source:Rajasthan irrigation Department http://www.rajirrigation.gov.in/3bsabarmati.htm) Gujarat?
	b. Proposed dams:	In Rajasthan: Ongoing Water Surface Projects 15 Minor irrigation projects with a total storage capacity of 15.4 Mm3, are under construction in this Basin. An additional area of 3.2 kha will be irrigated on completion of these projects. 6. Proposed Water Surface Projects 26 Minor and three Medium irrigation projects and one lift scheme, with a total live storage capacity of 180 Mm3, have been proposed in this Basin. An additional area of about 19 kha will be irrigated on completion of these schemes. (source:Rajasthan irrigation Department http://www.rajirrigation.gov.in/3bsabarmati.htm) Gujarat?
	c. Live storage of major dams:	Present use of surface water in the basin is 1.8 km3. Live storage capacity in the basin has increased significantly since independence. From just about 0.1 km3 in the third plan period, the total live storage capacity of the completed projects has increased to 1.4 km3.(Source: Water Resource

		Ministry, Government of India Data.http://wrmin.nic.in/riverbasin/sabarmati.htm)
	d. Live storage through proposed dams:	a storage quantity of over 0.1 km3 would be created on completion of projects under construction. An additional storage to the tune of over 0.1 km3 would become available on execution of projects under consideration. (Source: Water Resource Ministry, Government of India Data.http://wrmin.nic.in/riverbasin/sabarmati.htm)
	e. Inter basin transfer systems:	In Rajasthan: To Banas Basin 3.4 Mm3/yr - To Luni Basin 51 Mm3/yr ((source: Rajasthan irrigation Department http:// www.rajirrigation.gov.in/3bsabarmati.htm)
	f. Any Other:	
5.3	Command area of major dams	
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	Rajasthan and Gujrat Irrigation Departments. Sabarmati River Front Development Project . Viksat: an NGO that developed a multistakeholder platform for Sabarmati
6	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	National Water Policy, 2002, Gujarat Water Policy (No Details!), Sabarmati River Front Development Corporation is a company working with the Ahmedabad Corporation on Riverfront development (Incomplete!)

7	Key Issues:	The basin is frought with water conlficts over allocations for cities and agriculture, groundwater aquifers are deterioration, water quality is also a seriuos issue with 1) excessive fluoride; (2) excessive total dissolved solids, (3) excessive nitrate, and (4) excessive salinity. (Source: Sustainable Development of the Sabarmati Basin: B.J. PARMAR-O.T.GULATI,http://www.oieau.fr/ciedd/contributions/atriob/contribution/parmar.htm) The ambitious Sabarmati Riverfront Development Project has raised pertinent issues about restoration as against beautification and resettlement and rehabilitation of the displaced population.
8	Enabling instruments- Law/ Policy/ Economic & Financial Measures for introducing IWRM in the basin	1. In Gujarat: For the sustainable and optimum utilisation of its available water resources, the river Sabarmati basin has been taken up by the State of Gujarat for integrated river basin planning and management under Indo French Bilateral Programme.The existance of an agreement between France and the Indian Union and the initiation of a pilot project on Sabarmati "Integrated Management of the Sabarmati River Basin" started at the end of 1999 and was supposed to end by 2001. Main objectives of teh project were a) Organisation of an information system for the Sabarmati river basin, b) Preparation of a long-term development scheme for the Sabarmati river basin and Definition of a priority action programme, based on the interaction and choices of the new "Sabarmati River Basin

		Committee". c)Owing to semi-arid conditions and water shortage, measures should be taken to manage water demands (source: http://www.water-international-france.fr/article.php3?id_article=147&idRubSel=213&id_parent=&id_rubrique=214&id_pere=) Deatils attached as Annex 2. Sabarmati is a candidate basin from india for teh eatblishment of South Asian network of River Basin | organisations 3. India- Basin Dialogues in Brahmani and Sabarmati basin under CPSP (ICID)

SCHEDULE B
ASSESSMENT OF RIVER BASINS ORGANISATIONS (RBOs) IN SOUTH ASIA

nil

SCHEDULE C
ASSESSMENT OF RIVER BASINS ORGANISATIONS (RBOs) IN SOUTH ASIA

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	**Name of the Voluntary RBO**	**VIKSAT: Vikram sarbhai Centre for Development interaction http://www.viksat.org/ssforum.htm**
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);	Viksat initiated the formation of Sbarmati Stakeholders forum for community led basin management (**Source:** NEGOTIATING A PEOPLE-BASED GOVERNANCE INSTITUTION FOR SABARMATI BASIN MANAGEMENT1: The Gujarat Experience, Srinivas Mudrakartha)
1.2	Reflection of basin perspective in the organization's constitution/past/planned work and activities?	The fact that Basin Level Stakeholders Forum is the the apex federating body comprising members nominated by the stakeholder subgroups from all over the basin reflects a basin perspective of work. The basin level Sabarmati

		River Basin Stakeholders Forum (SSF) was launched on March 17, 1999 at Ahmedabad which was attended by 60 participants. The participants were representatives from the Panchayati Raj institutions, the farmer community, industry, academics/researchers, municipal corporations, irrigation department, dairy cooperatives, NGOs and select individuals from the urban areas.
1.3	Scale of work: Sub-basin/basin scale?	Sabarmati 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;	Various issues tackled through stakeholders forum
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?	data not found
1.6	Efforts taken by the Civil Society RBO to upscale the vision/activities at basin level	presently working at the absin scale
1.7	Participation in lobbying and advocacy at appropriate levels (provincial, national, international)	working actively in lobbying and advocacy