

RIVER BASIN

INDUS

[PAKISTAN]

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

Sr. No.	Details	Response
1	Physical Features - General Information	
1.1	Name of River basin (also indicate regional names used in different countries, states along its course);	Indus It runs a course through in Jammu and Kashmir and Northern Areas, flowing through the North in a southerly direction along the entire length of country, to merge into the Arabian Sea near Pakistan's port city Karachi.
1.2	Relief Map and Index Map of RB with Country/ State/ Province boundary marked to be attached.	under process
1.3	Geographical location of the place of origin (Country/District. Please indicate on relief and Index Map)	It originates in Jammu and Kashmir in the Tibetan plateau in the vicinity of Lake Mansarovar
1.4	Area (in Sq. Kms.),	1165500 sq. km
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	880,438 Shikarpur , 852995 Dera Ismail Khan (Source 1998 Census Report)
	(b) More than 1 Million – 10 Million	1,056,620 Mianwali, 2,635,903 Muzaffargarh, 1,643,118 Dera Ghazi khan, 3,141,053 Rahim Yar Khan, 1,688,811 Dadu, 2,891,488 Hyderabad (Source 1998 Census Report)
	(c) More than 10 Million	N.A
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);	Total length 12% in Jammu and Kashmir and 88% in Pakistan
2	Hydrological and Land use Features:	
2.1	Average annual rainfall (in mm); (Support with distribution pattern on Relief Map of RB {at 1.2} - indicating regions receiving high, medium or low rains);	More than 1200 mm
2.2	Maximum-minimum temperatures in Degree Centigrade	Min. 2 & Max. 49
2.3	Average annual yield (discharge) of water in Cubic Meter and the average yield for last past five years	7534978000 cub. M
2.4	Major tributaries	Kabul, Beas, Satluj, Hunza, Sawan Stream, Ravi, Chenab, Jehlum, Indus, Khizer, Gilgit, Kunar, Gomal, Zhob
2.5	Percentage shares of major water uses & Surface and groundwater abstraction in percentages-Convert into Table (a.) Agriculture,	68.42%
	(b.) Industries,	
	(c.) Domestic,	
	(d.) urban,	4%
	e.) environmental flows.	25.26%
2.6	Major cropping pattern	Cotton 8%, Rice 7%, fodder 4% Sugarcane 4% Wheat 11% Oilseed 1% Pulses 3.5%
2.7	Cultivable area under irrigation	6356260 hectares
2.8	Cultivable area not under irrigation	1335569 hectares

2.9	State other Water Uses- eg. Navigation, power, recreation etc.	Hydropower
3	Ecosystem Features	
3.1	Agro-climatic zones	North west frontier Mixed cropping (NWFP), Sindh North Rice Wheat (SRW), Sindh North Cotton Wheat (SCW)
3.2	Major sub ecosystems (zoogeographical zones)	Tropical forest-sandy, Dry sub-tropical semi evergreen scrub forest, forest, deserts, semi arid
3.3	Major soil types	Sandy, Silty, Clay
3.4	National parks/sanctuaries, lakes, wetlands, etc.	Manchar lake, Rangla Wetlands, Uchhali complex wetlands, Uchhali lake, Taunsa wetland, Bijora chak wetlands, Hudero lake, Kinjhar lake, Rann of Kutch
3.5	Brief information about the delta region of the basin (area, location, major urban centers in the delta, etc.)	Indus delta, area 41440 sq. km It includes 225,000 hectares (556,000 acres) of mangrove forests and swamps. To the west of the delta is the seaport of Karāchi; to the east the delta fans into the salt marshes known as the Rann of Kutch. Hyderabad is 130 km north to delta
4	Water Quality	
4.1	Prevailing water quality standards (e.g. Class I, II, III. etc, indicating permitted uses)	Class 1 upto Kotri barrage. At Manchar lake water is polluted.
4.2	Stretches (along the River) in Kms. with water quality classes indicated (may be marked on the map)	Manchar lake
4.3	Sources of Pollution, with data indicating quantum and/or severity.	Water is polluted by inflows of Main Nara Valley Drain in Manchar lake. Salinity of Water was 11172 ppm in Feb.2003. Source:SMO WAPDA, Observation June, 2001 to December 2003.
4.4	Prevailing abatement techniques e.g: ETP, STP, legislation, etc.	N.A
5	Current status of the resource development & potential for development	

5.1	Water availability: a. Per capita water availability (in lpcd)	1505 lpcd
	b. Per hectare water availability (in Cubic meters for cultivable command area):	979 cub. M
	c. Availability of environmental flows (Current reserve, if any):	N.A
	d. Availability of ground water/ Average annual ground water abstraction/recharge.	N.A
5.2	Structures: a. Major dams/barrages (with utilization categories):	Terbela Dam, Chashma barrage, Punnad Head works, Taunsa barrage, Guddu barrage, Sukkar barrage, Kotri barrage, Ghulam Muhammad barrage
	b. Proposed dams:	Kala Bagh, Bhasha, Akhori
	c. Live storage of major dams:	Terbela Dam designed gross storage capacity 14.4 b cubic m. At present gross storage capacity 10.53 b cubic m
	d. Live storage through proposed dams:	Kala Bagh 6.1 MAF
	e. Inter basin transfer systems:	Chashma Jhelum link canal, Taunsa-Punjd link
	f. Any Other:	N.A
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	a. Water and Power Development b. N.A
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	N.A

7	<p>Key Issues: Critical issues in water resources development and management in the basin- that constrain economic and social development. (e.g. Water Rights, Need for Negotiations, Levels of participation, disaster management, Equity, Water sharing, Allocations, Conflicts, etc). Kindly provide copies or abstracts</p>	Kala Bagh Dam
8	<p>Enabling instruments- Law/ Policy/ Economic & Financial Measures for introducing IWRM in the basin</p>	N.A

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

Sr. No.	Details	Response
1	Legal / Political Mandate	
1.1	Is there any RBO? If yes, Give Name.	Indus River system Authority
1.2	How has it been constituted? (Statutory/ Voluntary/ Any other form).	Statutory
1.3	State objectives and organizational structure of the RBO in outline & enclose brochures	Organizational Structure: -Comprises of five Members nominated by each Province and the Federal Govt. Chairman of the Authority by rotation for one year in the order Balochistan, NWFP, Punjab, Sindh & Federal Chairman WAPDA and Chief Engineer Adviser shall be ex-officio Members
1.4	Functioning level of the RBO (watershed/micro basin/sub-basin/basin, etc.) 1. Does the RBO have the responsibility and technical capacity to coordinate integrated water resources planning in the basin? 2. Does the RBO have a proactive and efficient data management and information dissemination process to inform all stakeholders of basin conditions, water resource availability, and major issues?	Basin level. 1. Yes a) The Advisory Committee will be consisting of IRSA, CEA, Members WAPDA, Secretaries Agriculture & Irrigation Departments of the Provinces b) The Advisory Committee is being assisted by a Technical Committee comprises Directors Regulation Punjab & Sindh, S. E Pat feeder Balochistan & S. E HQs NWFP 2. Yes
1.5	What are the major activities carried out by the RBO since inception?	

1.6	What are the proposed activities of the RBO?	<ol style="list-style-type: none"> 1. Regulation & distribution of surface waters amongst the provinces. 2. Review & specify river and reservoir operation patterns 3. Compilation of canal withdrawal indents and issue of operational directives 4. To settle any question that may arise between two or more provinces in respect of distribution of water
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 (eg. Indus Commission).	
1.9	Legal / political mandate wherein stakeholders can appeal for redress/decision and conflict resolution	Indus River System Authority
1.10	Does the RBO have an appellate authority?	Yes
1.11	Is the RBO an autonomous body?	Yes
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? (Please elaborate the authorization).	
1.14	Does the RBO receive direct budgetary grants? (From Govt./ Statutory Bodies/ Public donations/ Any Other Agencies.)	From Govt.

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).	It protects the existing uses of all the Provinces. It recognizes the need for constructing new storages on the Indus and other rivers wherever feasible for planned further Agriculture development. It recognizes the need to escape some water below Kotri to check sea intrusion. It lays down the mechanism of sharing shortages and surpluses in the water availability
1.16	Policy of the RBO on – (i) Water allocation between users/sectors/sub-basins; and	•Crop season – forecast of Water Availability in the system Provincial shares as per Accord. Criteria for Reservoir operation and preparation of Rule Curve
	(ii) Procedures and processes for determining the above. (Kindly elaborate upon the above).	•Vetting by the Technical Committee and approval by the Advisory Committee. Provinces prepare their canal withdrawal plans as per their shares (Similar to a deposit in a Bank Account). Provinces supply their Water Account on 10-daily basis. The statements are reviewed & circulated to all the Provinces by IRSA for transparency
1.17	Presence of Trans-boundary Water Agreement or Treaty in case of a trans-boundary basin, (and a common RBO representing the countries/provinces) (eg. Indus Treaty in case of River Indus flowing through India and Pakistan) (Kindly indicate the agreement/ treaty. Also, indicate RBOs are representing Trans boundary Basins.)	Indus Water Treaty 1960
1.18	Presence of a 'Tribunal' appointed in case of intra basin or inter basin disputes (eg. Krishna Water Disputes Award Tribunal established between states of Maharashtra, Karnataka, and Andhra Pradesh); (Kindly indicate name & nature of tribunal).	Indus River System Authority

1.19	Is the RBO responsible for preparing Basin Management Plan. If yes, please enclose a copy	N.A
2	Processes of community/stakeholder participation in the functioning of the RBO	
2.1	Are the stakeholders from the basin included in the governing body of the RBO? (e.g.: farmers, academics, CSO representatives, etc.)	Yes
2.2	Elaborate the nature and frequency of public consultation initiated by the RBO (for example: Annual Public hearings, representations from individuals/public,etc.)	N.A
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 (eg. Interaction of RBO with Water User Groups).	
2.6	Stakeholder participation sought by the RBO for preparing Basin Management Plan	
3	Conflict resolution and negotiations	
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.	
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SCHEDULE C
ASSESSMENT OF RIVER BASINS (RBs) 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	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);	Envisaged as per WAA 1991 Para 13 Created in 1992 through an Act of Parliament (Act No. XXII of 1992)
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?	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)	